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AUTHOR Sproull, Natalie L.; And Others
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ABSTRACT

Though the television program "The Electric Company" was intended for a second and third grade audience, in May of 1975 the Children's Television Workshop undertook an evaluation of the effects of the program on four, five, and six year olds. The research was aimed at measuring reading gains, the retention of reading gains, and the differential effects of the age of the viewer. The main portion of the text describes the research design, instrumentation, results, and conclusions. The appendixes supply examples of the data collection instruments, and they provide extensive examples of "The Electric Company" curriculum. (EMH)

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READING BEHAVIORS OF YOUNG CHILDREN WHO VIEWED THE ELECTRIC COMPANY

by

Natalie L. Sproull
Project Director

Eric F. Ward
Associate Project Director

Marilyn D. Ward
Project Coordinator

A Final Report
to

Children's Television Workshop

Patricia L. Hutinger
Education Consultant

Kathryn Carpenter
Editorial Consultant

Daniel T. Fishco
Reading Consultant

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Natalie Sproull
Eric Ward
Marilyn Ward

Chapter One

INTRODUCTION

The Electric Company, a five-day-a-week, half-hour television show for children, was first telecast in 1971. Produced by Children's Television Workshop, the program's purpose is to supplement classroom instruction in reading through the use of techniques particularly effective in the television medium. These are: animation, music and sound effects, humor and incongruity, and repetition of important program elements.*

The Electric Company's target audience is second, third and fourth grade children who rank in the lower half of their class in reading achievement. According to the booklet introducing the program (Children's Television Workshop, 1971):

> Because the crippling effects of reading deficiency begin to be felt in the third grade, where other subjects come to depend

---

* The effectiveness of these techniques has been demonstrated by the television show, Sesame Street, also produced by Children's Television Workshop and designed to help pre-schoolers learn. Former U.S. Commissioner of Education, Dr. Sidney P. Marland, Jr., has described Sesame Street as "virtually a national institution and a major supplement to existing classroom programs for very young children...."

> increasingly on the ability to read, it was decided that "The Electric Company" should be aimed at the second grader beginning to experience reading difficulty. It was felt that for the second grader, such a show could serve in part as prevention as well as cure.
>
> By addressing itself to the needs of the second grader in the lower half of his reading class, the program should also help third and fourth graders who continue to have reading problems.

An evaluation of the first two years of the show, conducted for CTW by Educational Testing Service (Ball and Bogatz, 1973), showed that positive effects occurred among the target audience when the program was viewed in the classroom as a supplement to other reading activities. Unstructured (at home) viewing apparently does not have as significant an impact, although this conclusion was based on data described by the researchers as "ambiguous."

Throughout the years the program has been telecast, CTW has received informal reports that the show has had a favorable effect on a non-target audience: pre-schoolers and first graders. The possibility of this occurring was anticipated when the program was conceived.

> Despite the fact that the program will not be aimed at the first-grader, we know that many first-graders and even some preschoolers will watch if the program is sufficiently entertaining. The Workshop will be interested in the impact of the series on these younger viewers and will conduct some special research here. (Children's Television Workshop, 1971)

Accordingly, in May, 1975, Children's Television Workshop proposed that an evaluation, designed to assess the effects of The Electric Company on a non-targeted, younger audience, be carried out during a seven

month period in the summer and fall of 1975. The specific questions of interest to CTW were:

- Will 4, 5, and 6 year old children attending day care centers show improvement in reading skills and reading related behaviors as a result of systematic viewing of The Electric Company during the summer?
- Will 4, 5, and 6 year old children show improvement in reading skills and reading related behaviors approximately two months after fall enrollment in kindergarten and first grade as a result of systematic viewing of The Electric Company?
- Will the effects of viewing The Electric Company differ for the three age groups?

A proposal to conduct the evaluation was submitted to CTW by the Project Director through Western Illinois University, Macomb, Illinois, in late spring 1975. The proposal was accepted with the project to run from June 1, 1975 through December 31, 1975. (The time period was later extended to January 31, 1976.) A description of the conduct of the study and the results of the evaluation are contained in the following chapters of this report.

Chapter Two

RESEARCH DESIGN AND METHODOLOGY

The Subjects

The subjects of the study were children attending six day care centers, three in Illinois and three in Iowa, in the summer of 1975. The primary age groups were: 4 year olds (children who would enter kindergarten in one year); 5 year olds (children who would enter kindergarten in the fall); and 6 year olds (children who would enter first grade in the fall). At the request of the center directors, older children attending the centers also participated in the study. Data for this group were analyzed separately.

The 4 year olds ranged in age from three years seven months to four years nine months;* the 5 year olds from four years seven months to five years nine months;** and the 6 year olds from five years seven months to six years nine months.***

---

* Illinois children with birthdates from 12-1-70 to 11-30-71 and Iowa children with birthdates from 9-15-70 to 9-14-71.

** Illinois children with birthdates from 12-1-69 to 11-30-70 and Iowa children with birthdates from 9-15-69 to 9-14-70.

*** Illinois children with birthdates from 12-1-68 to 1-30-69 and Iowa children with birthdates from 9-15-68 to 9-14-69.

The Research Design

A pretest, posttest, two treatment research design was used for the study with subjects randomly assigned to treatments by age and sex within each day care center. The experimental treatment consisted of subjects viewing The Electric Company daily for one-half hour five days a week for eight weeks. To control for any effects of the medium itself, the second treatment consisted of subjects viewing another children's educational television program daily for one-half hour five days a week during the same period. The non-TEC viewers watched a program that is highly rated as a children's show. The program emphasizes social skills and solicits responses from the audience. No attempt is made to teach reading related skills or behaviors. Because the July 4th holiday fell within the viewing period, the number of programs shown was 39.

Ten to 12 weeks after the posttest and after subjects had entered either kindergarten or first grade in Fall, 1975, an in-school follow-up was conducted. Subjects who remained in the day care centers were also included in the follow-up. The children were individually tested and their teachers were asked to complete a questionnaire assessing academic performance.

Additional data were obtained through a parent questionnaire mailed to the home of each child in the study.

The Viewing Procedures

Receivers, video-cassette players, and tapes of the programs were provided at each day care center. Such equipment was necessary because television reception at most centers was poor, and The Electric Company was telecast at a time which conflicted with lunch or naptime.

The same viewing procedures were followed for both programs. Each group was separated from the other while viewing occurred to avoid contamination of the treatments. Viewing for the 4, 5, and 6 year olds took place in the morning at each day care center.

For greater control of the experiment, at least two Viewing Assistants remained with each group while viewing occurred. Viewing Assistant 1 was responsible for maintaining order, inserting and playing the video cassette for the day's program, and recording attendance. Viewing Assistant 2 systematically observed the children's viewing behaviors and reactions to the program. The children were instructed to sit either on the floor or chairs. Measures were taken to assure that each child could see and hear. To avoid interruptions, the children were taken to the bathroom prior to the beginning of the program. (Copies of the observation instrument and directions for Viewing Assistants are included in Appendix E.)

Site Selection

The Quad Cities, an area 70 miles north of Western Illinois University, was the site selected for the study. Three Illinois cities---Rock Island, Moline, and East Moline---and Davenport, Iowa form the Quad Cities which has a population of more than a quarter-of-a-million people. Located on the Mississippi River, the area's industrial complex consists of farm machinery manufacturing, food processing plants, and those industries commonly associated with river commerce. It is also a railroad center. Because of these economic elements, it was assumed that the subjects of the study would reflect a mixture of race and socio-economic background typical of the Quad Cities area.

Day Care Center Selection

Criteria for selection of the day care centers were:

- licensing or capacity for 50 or more children;
- a minimum summer attendance of twenty 4, 5, and 6 year olds;
- enrollment excluding children with special needs;* and
- willingness to participate in the study.

Names and capacities of all day care centers in the Quad Cities---a total of 16---were obtained from the licensing sources in Illinois and Iowa. Six centers, three in each state, met the criteria.

Project Staff

Principal members of the project staff were the Project Director, Associate Project Director, and Project Coordinator. Consultation was provided by a reading specialist and a specialist in early childhood education. All were members of the Western Illinois University faculty.

Examiners for the pre- and posttest and the in-school fall follow-up were selected from faculty members and graduate students at WIU who held teaching degrees. The examiners either had experience in testing or received special training for the project. The examiners were instructed in the administration procedures specific to each test, and acquired field experience through administering the tests locally prior to Quad Cities testing.

One of the key staff members was the Quad Cities Coordinator, an educator living in the Quad Cities. His responsibilities were: scheduling

* Day care centers for the mentally retarded, emotionally disturbed, or physically handicapped were not considered.

for the pre- and posttest weeks, providing counsel to the Viewing Assistants, assuring that the selected programs were shown in each center and that the subjects viewed all of the 39 programs, handling all on-site problems as they arose, and providing liaison between the site and the project staff.

There were 15 Viewing Assistants. Two each were assigned to the four smallest centers. One center required three because of the size of the groups, and four were assigned to another because the programs were shown twice a day: in the morning for the 4, 5, and 6 year olds and in the afternoon for the older than 6 group.

The Viewing Assistants in five centers were center employees who were employed by the project during the airing of the programs. Two were employed from outside one center because the director preferred that the staff concentrate on center related tasks. The Viewing Assistants received special training in observation and recording procedures, and in the use of video equipment.

Time Schedule

The time schedule for the project was as follows:

June 1-18	Initiation of the project. Selection of day care centers. Day care center contact and visitation to explain project. Generation and preparation of pretest instrument. Pretest pilot.
June 19-29	Administration of pretest. Random assignment of subjects to treatments. Generation and preparation of observation instrument. Selection and training of Viewing Assistants. Generation and preparation of parent questionnaire.
June 30-Aug. 24	Viewing period (eight weeks) First mailing of parent questionnaire. Generation and preparation of posttest instrument.

June 30-Aug. 24 (con.'t)	Posttest pilot. Second mailing of parent questionnaire.
Aug. 25-Aug. 29	Administration of posttest. Interviews with subjects.
Sept. 1-31	Phone, mail and personal contact with school superintendents and other school personnel to arrange for fall follow-up. Generation and preparation of fall follow-up evaluation instruments, and Pilot Testing. Generation and preparation of fall follow-up teacher questionnaire, and Pilot Testing.
Oct. 1-Nov. 12	Location of children in schools. Visits to schools to consult with principals.
Nov. 13-21	Administration of fall follow-up evaluation of children and completion of teacher questionnaire.
Nov. 22-Dec. 5	Testing of children absent during the previous week.
Dec. 6-Dec. 31	Data processing and analysis.
Jan. 1-31, 1976	Data analysis and preparation of final report.

Chapter Three

INSTRUMENTATION

Given the target audience of the program and the purpose of the study, the selection and generation of instruments posed an interesting challenge. It was not anticipated that the subjects would exhibit many reading skills either before or after the study. Rather, the study was undertaken to determine if pre-schoolers might acquire a degree of competency in any of the various reading strategies portrayed on TEC. One problem was especially bothersome. The experimental treatment and post-testing had to be completed before the beginning of the school year so that school training would not confound the results of the study. Thus, there was a limited amount of time available for the viewing period and planning the study. The time constraint made it necessary to begin pre-testing two weeks after the project was approved.

Pretest

The curriculum goals for TEC placed an emphasis on the following elements of the reading process (Appendix A):

(1) The left-to-right sequence of print corresponds to the temporal sequence of speech.

(2) Written symbols stand for speech sounds.

(3) This relationship is sufficiently reliable to produce successful decoding most of the time.

(4) Reading is facilitated by learning a set of strategies for figuring out this symbol-to-sound relationship.

(5) However, the goal of decoding is to extract meaning from written messages; the reader's job is not completed with the "sounding-out" of a word or sentence.

Given these emphases, several factors were considered in selecting items for the pretest.

The first priority was to obtain a measure of already existing behaviors corresponding to TEC goals, specifically the symbol-to-sound relationships and the extraction of meaning from written messages. It was decided that certain traditional measures of reading readiness, such as reading the alphabet, should be included. This was considered important because the majority of the children were not expected to read and would not be able to respond to items measuring the goals of TEC.

Further, while some children might not know the strategies for sounding out words, they might nevertheless have had some reading experience. For this reason the pretest included lists of sight words commonly found in standard primers and pre-primers.

Two other factors were important in the pretest. The test would have to be administered in a relatively short time because of the limited attention span of pre-school children. Equally important was the order of the test items. Items had to be ordered so that the children would not be frustrated early in testing by an inability to perform unfamiliar tasks and so perform poorly on later items.

With the above considerations in mind, the following measures were

selected for the pretest:

A. Group Testing

1. Metropolitan Readiness Test (Form A)--Matching Section*

2. Metropolitan Readiness Test (Form A)--Alphabet Section

3. Metropolitan Readiness Test (Form A)--Numbers Section (items one through 18 only)

B. Individual Testing

1. Remaining letters of the alphabet not included in the MRT alphabet section.

2. Reading words from The Electric Battery** individual test to assess symbol-to-sound relationships.

3. Dolch pre-primer words.

4. Dolch primer sight words.

5. Reading sentences from The Electric Battery individual test to assess left-to-right sequence of print.

6. Mixed order sentences from The Electric Battery individual test to assess extraction of meaning from messages.

7. Nonsense words from The Electric Battery individual test to assess symbol-to-sound relationships.

Because of the age of the children, the MRT group test was administered to groups of two to four rather than to larger groups as is usually the case. The recommended time limits were not imposed for the MRT subtests.

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* The Metropolitan Readiness Test, Harcourt, Brace, Jovanovich, Inc., 1964, was selected from the many readiness tests available primarily because of its relatively high predictive validity coefficients when using reading as the criterion measure. The effectiveness of this test has been shown in numerous studies. The selection of the MRT was made by the project staff in consultation with Dr. William Mehrens, an expert psychometrician at Michigan State University who frequently reviews tests for Buros Mental Measurements Yearbook.

** The Electric Battery is an instrument generated for evaluation of The Electric Company by Ball and Bogatz (1973). A copy of The Electric Battery Individual Test is included in Appendix B.

Following the group test, each child in the group was given the individual test. On the individual test, testing was terminated on the basis of a mastery criterion for each subtest. The complete tests and testing procedures are included in Appendix B.

A day care center not located in the Quad Cities area was selected to pilot the pretest. The children enrolled in the center were the same ages as those selected for the study. Based on the results of the pilot, items were re-ordered and procedures modified. Procedural changes consisted of deleting time limits for the Metropolitan Readiness Test and permitting the examiners to help children who had difficulty finding the appropriate line.

Pretesting occurred at times convenient for the day care centers, usually during the morning and early afternoon hours. Subjects absent during this period were given the pretest on the day of their return and prior to viewing the television programs. In addition, children who enrolled in one of the day care centers during the first two weeks of the viewing period were pretested and included in the study.

There was considerable variation in testing conditions. At some centers private rooms were available, but at others testing was done in a large room where other activities were underway and the noise level was high.

Viewing Assistants' Observations of Children's Meta-Communication

A related area of interest which is seldom studied is the meta-communication---or reactions---of children while they view television. Each child was observed once a week during the eight week viewing period.

The variables for this assessment were those used in a previous

study conducted by the Project Director (Sproull, 1973), and included: (1) attention; (2) reading of sounds, words, or phrases; (3) modeling of sounds, words, phrases or imitation of actions; (4) talking, including answering program questions, positive or negative comments about program or characters, offering information to characters on the program, and talking not related to the program; (5) laughter elicited by the program; (6) seeking attention from the Viewing Assistant; and (7) movements. A copy of the observation forms used by the Viewing Assistants is included in Appendix E.

On a weekly basis project staff conducted observations of both TEC and non-viewer groups. This was done to check on the Viewing Assistants' recording of behaviors, to observe the interactions between the Viewing Assistants and the children, and to observe the group viewing process.

Parent Questionnaire

A questionnaire was mailed to the parents of the subjects to determine the household's socio-economic background and the at-home television viewing habits of the children. The questionnaire was modeled after one generated by Ball and Bogatz (1973) and the variables were:

1. Mother's level of education.
2. Mother's employment outside the home.
3. Educational level of male head of household.
4. Extent of employment of male head of household.
5. Kinds of television programs watched by child.
6. Child's weekly TV viewing habits.
7. Number of years child has watched each program.
8. Child's personal possessions.

9. Family possessions.

A copy of the Parent Questionnaire appears in Appendix F.

The Posttest

Because the project was initiated rapidly, it was not known at the time of the pretest which TEC programs the children would view. After selection of the programs, show-specific items could be, and were, included on the posttest. The posttest items were determined in a meeting of research staff members of Children's Television Workshop, project staff members, and a reading consultant who had reviewed the content of the programs. The modifications from pretest to posttest are shown below. A copy of the posttest scoring sheet, and examples of posttest items, are in Appendix C.

A. Posttest Group Testing

1. Metropolitan Matching and Alphabet Subtests. The matching and alphabet sections of the Metropolitan Readiness Test (Form A) were retained for the posttest. Because The Electric Company does not emphasize numbers, the MRT numbers section was eliminated.

B. Posttest Individual Testing

1. Thirteen Alphabet Letter Names and Sounds. The ten letters of the alphabet given individually in the pretest were retained. Three letters, j, t, and b which were emphasized on programs of The Electric Company viewed by the subjects, were added for a total of 13 letters. The children were tested to assess letter knowledge and letter sound.

2. Ten Word Blends. Live silhouettes are used on programs of The Electric Company to illustrate blending of words. To test the ability to blend words, children were shown 10 cards, each containing two silhouettes saying separate syllables of a word. Because of the young age of the children tested, auditory cues were used if the child was unable to read the word.

3. Six Messageman Messages. Six messages printed on individual

cards were added to the posttest. This part of the testing utilized the character "Messageman" who appears on The Electric Company to present various messages. Three of the six messages included in the posttest had appeared on programs viewed by the children, and three did not appear on the programs shown during the project.

4. Ten Word Recognition Tasks. Ten words were added to the posttest to assess word recognition. The word to be selected was listed with three other words and the children were asked to point to the specific word.

5. Twenty-six Reading Words Measuring 36 Sounds. The nine reading words used in the pretest to measure 12 sounds were retained in the posttest. Seventeen words measuring 24 sounds were added.

6. Three Left-to-Right Orientation Tasks. The two sentences measuring left-to-right orientation were retained for the posttest. One sentence and a question to elicit sentence meaning were added.

7. Two Mixed Order Sentences. One mixed order sentence was retained, one added, and one eliminated for a total of two mixed order sentences.

8. Twelve Nonsense Words Measuring 16 Sounds. The 12 nonsense words measuring 16 sounds were retained.

In order to keep testing to a reasonable length, the Dolch pre-primer and primer word lists were eliminated.

Pilot testing of the posttest was done in a day care center not in the Quad Cities area but with an enrollment which matched the age levels of children in the study. Items of the posttest were modified and placed in a different order of difficulty because of suggestions arising from the pilot test. The posttest was administered in a five day period at times convenient to the day care centers, usually in the morning and early afternoon. Children who were absent during the posttest week were tested by project personnel the first week in September on the day of their return to the center. During posttesting, the examiners were not aware of which children had viewed TEC and which were non-viewers.

Children's Responses to the Purpose of The Electric Company

To assess the extent to which children understood the purpose of TEC, each was asked two questions in an individual interview. Interviews were held after posttest administration and were conducted with both TEC viewers and non-viewers. The two questions were:

> What is the TV show The Electric Company about?
> What could another child learn from The Electric Company?

The responses were content analyzed and coded into 33 categories. The list of categories and responses are included in Appendix G.

In-School Fall Follow-up

Two instruments were generated for an in-school follow-up of children who participated in the summer viewing and entered either kindergarten or first grade in Fall, 1975, or who remained in the day care centers. Both instruments were piloted with elementary grade teachers and their students in schools not located in the Quad Cities. Based on the results of the pilot test, the instruments were modified prior to administration in the Quad Cities' schools.

One instrument, a teacher questionnaire, was completed by the teachers of the pre-kindergarten and pre-first grade children who participated in the study and were enrolled in Quad Cities' schools. Day care center personnel were also asked to complete the questionnaire for those children who remained in the centers. Questionnaire items included the respondent's opinions of the children's reading related behaviors, attitude toward school, attitude toward reading, and prediction of future reading ability and general academic performance. A copy of the questionnaire is included in Appendix D.

The other instrument, an evaluation of children's reading related behaviors (see Appendix D), was administered by professional examiners from WIU who were not aware of which children had been TEC viewers and which were non-viewers. The variables were:

1. Sounds. Sounding out four nonsense words.
2. Word meaning. Completion of two sentences by selecting from a list of words for the first and supplying an appropriate verb or verb phrase for the second.
3. Left-to-right and line-by-line progression. Subject asked to read aloud one of the two sentences used to test word meaning as well as identifying objects in nine pictures printed on one sheet.
4. Writing--left-to-right progression. Subject asked to write a specific word.
5. Written directions. Subject shown cards with "sit" and "run" written on them and asked to follow directions.
6. Oral directions. Compliance with verbal directions given by the tester.
7. Speaking. Responses to a series of questions to test ability to be understood when speaking.
8. Repetition of sounds or words. Accurate repetition of three nonsense words spoken by tester.
9. Relationships. A series of oral directions requiring subject to indicate up, down, under, over, top, bottom, big and little.

In order to conduct the in-school follow-up, permission was obtained from the superintendents and research committees of the appropriate school districts for teacher/student participation. The principals of each school were then contacted and they, in turn, notified the teachers involved. When the examiners visited the schools they asked the teacher to complete the questionnaire while each child was individually tested in an area outside the classroom. If a teacher was unable to complete the questionnaire immediately, the examiners made arrangements to

return to the school later to pick up the form, or the teacher returned it by mail.

Chapter Four

FINDINGS

Description of the Subjects

A total of 318 children were pretested prior to viewing the programs. More than half (N=170) attended two day care centers, one in Illinois (Day Care Center C) and one in Iowa (Day Care Center F). There were approximately 40 children each in three other centers (A, B, E) and 24 children in Day Care Center D.

The majority (more than two-thirds) were 4 and 5 year olds. Thirty-eight percent were 4 year olds, 38% were 5 year olds, 12% were 6 year olds, and 12% were older than six. Age levels were distributed almost proportionately across day care centers with the exception of the older than six children who were concentrated in two centers. There were more males (N=188) than females (N=130) with the sexes distributed almost proportionately across the day care centers.

The parents' educational level ranged from 9th grade to college. Most of the mothers worked outside the home.

Seventy-six children (24%) either left the centers during the eight week viewing period or were not in attendance during the week of post-testing. Attrition from pre-to-posttest ranged from 18% to 30% across

the day care centers.

Distribution of children by day care center, viewing condition and age level at pre- and posttest appears in Table 1.

Pretest Results

The purposes of the pretest were to: (1) determine levels of reading ability and reading related skills of young children not usually expected to possess either, and (2) acquire baseline measures against which to assess some posttest scores. Test results showed that children in each of the age groups did possess reading skills, albeit minimal. In addition, these skills increased as age increased with pre-first graders scoring highest of the three age levels.

Illustrative of the age differential in reading ability is the number of children in each age group for whom testing was terminated after each subtest. While all children were administered all items of the group tests regardless of performance level, criteria were predetermined for discontinuing testing on the subtests of the individual testing. Criterion-related attrition was highest among the 4 and 5 year olds. For example, testing was terminated for almost 50% (n=113) of the 4 and 5 year olds on the individual alphabet test because they could not read any of the 10 letters. Yet, only four of the 37 six year olds were unable to continue this part of the pretest. On the nine reading words, testing was terminated if a child read any four of the words incorrectly. Using this criterion, testing was terminated for all but six of the 120 4 and 5 year olds, and almost two thirds of the 33 six year olds.

Thus, only 19 of the 4, 5, and 6 year olds were tested on the next item, the Dolch pre-primer words, and only 7 of these children were tested

Table 1

Number of Children Distributed by Day Care Centers, Viewing Condition, Age Level at Pre- and Posttest

Day Care Center	TEC Viewers								Non-Viewers									
	4		5		6		Older		4		5		6		6+ Years		Overall	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
A	10	7	9	7	1	1	1	0	12	9	8	6	1	0			42	30
B	9	7	8	8	3	1	2	2	7	7	9	6			1	1	39	32
C	15	11	18	13	7	4			18	16	19	15	10	6			87	65
D	5	5	6	3					5	4	6	5	2	2			24	19
E	8	7	4	3	3	2	5	4	8	6	7	3	1	1	7	4	43	30
F	13	11	13	9	7	6	11	10	10	7	15	12	2	2	12	9	83	66
Overall	60	48	58	43	21	14	19	16	60	49	64	47	16	11	20	14	318	242

on the final subtest, the reading of nonsense words. The number of children who responded to, and for whom testing was terminated at the end of each subtest, appears in Table 2.

However, the high criterion related attrition rate on the pretest does not mean that reading capability is nonexistent among 4 and 5 year olds. The results indicated that while these children could not read well, they nevertheless possessed a limited number of reading skills prior to receiving formal reading instruction. Many children were able to complete a few matching items and select a few alphabet letters from an instrument designed for older children, as well as read a few alphabet letters.

Using the 4 year olds as an example, of the 120 who responded to the Metropolitan subtests 50% scored four or more correct on the matching test of a possible total of 14, 52% correctly selected four or more of the 16 letters in the alphabet subtest and in the numbers subtest 57% responded correctly to three or more of the 18 items (see Table 3).

Means and standard deviations for the pretest subtests are shown in Tables 4 through 6. As is evident in these tables, a small number of children responded to the individual alphabet sounds. Several examiners eliminated this portion of the pretest for those children who could name but few of the letters. This was done in order to keep their attention for the next task, the reading words.

Analyses of variance* were performed on those pretest variables for which there were a sufficient number of subjects. The results of these

* Two tailed tests were used on pretest data and one tailed tests on posttest data. The reader is cautioned concerning interpretations of percentages in succeeding tables. Where these percentages are based on a very small number of children they are best interpreted as direction rather than magnitude.

Table 2

Number of Children Who Responded to Pretest Subtests
And for Whom Testing was Terminated at the Completion of the Subtests

Subtests	4 Year Olds		5 Year Olds		6 Year Olds		6+ Years		Total	
	Resp.	Term.	Resp.	Term.	Resp.	Term.	Resp.	Term.	Resp.	Term.
Metropolitan Matching	120		122		37		39		318	
Metropolitan Alphabet	120		122		37		39		318	
Metropolitan Numbers	120	6	122	3	37		39		318	9
Individual Letter Names	114	57	119	56	37	4	39		309	117
Reading Sounds	57	55	63	59	33	20	39	3	192	137
Dolch Pre-Primer	2	1	4	1	13	10	36	2	55	14
Dolch Primer	1		3		3	1	34		41	1
Mixed Order Sentences	1	1	3		2		35		41	1
Nonsense	0		3		4		33		40	

Table 3

Number and Percentage of Children Scoring at or Beyond Specified Total Scores on Pretest

Subtest	Maximum Score	Age Level	N	n	%	Scored
Metropolitan Matching	14	4	120	60	50	4 or more
		5	122	35	42*	5 or more
		6	37	19	51	9 or more
Metropolitan Alphabet	16	4	120	63	52	4 or more
		5	122	64	52	8 or more
		6	37	24	65	15 or more
Metropolitan Numbers	18	4	120	69	57	3 or more
		5	122	66	53	6 or more
		6	37	19	51	12 or more
Individual Alphabet Letters	10	4	114	55	48	2 or more
		5	119	69	58	3 or more
		6	37	25	68	8 or more

* 70% of the 5 year olds scored 4 or more.

Table 4

4 Year Olds: Means and Standard Deviations of Total Scores On Pretests and Posttests

Subtest	Sex	Pretest						Posttest					
		TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
		$\bar{x}$	n	s	$\bar{x}$	n	s	$\bar{x}$	n	s	$\bar{x}$	n	s
Metropolitan Matching	M	2.48	33	2.46	2.93	32	2.29	4.33	24	1.73	5.03	27	2.02
	F	3.70	27	2.14	3.35	28	2.58	4.79	24	1.74	4.81	22	1.81
Total		3.03	60	2.38	3.13	60	2.42	4.56	48	1.73	4.93	49	1.91
Metropolitan Alphabet	M	4.21	33	5.01	4.75	32	5.28	6.58	24	4.50	7.79	24	4.67
	F	6.51	27	4.86	5.53	28	4.95	8.17	23	4.61	7.54	22	4.37
Total		5.25	60	5.04	5.[illegible]	60	5.09	7.36	47	4.58	7.67	46	4.48
Metropolitan Numbers	M	3.30	33	3.29	3.25	32	2.21						
	F	3.96	27	3.17	3.50	28	2.68						
Total		3.60	60	3.23	3.36	60	2.42						
Individual Letter Names	M	2.28	32	3.06	2.25	31	2.78	3.16	24	3.57	3.65	26	3.57
	F	2.74	27	2.75	2.58	24	2.78	4.33	24	4.12	3.77	22	3.71
Total		2.49	59	2.90	2.40	55	2.75	3.75	48	3.86	3.70	48	3.60

Table 4, continued

Subtest	Sex	Pretest						Posttest					
		TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
		$\bar{x}$	n	s	$\bar{x}$	n	s	$\bar{x}$	n	s	$\bar{x}$	n	s
Individual Letter Sounds	M	1.00	3	1.00	2.66	3	2.30	0.39	23	0.93	1.44	25	2.41
	F	3.50	2	2.12	3.00	1	0.00	1.33	24	2.94	0.52	21	1.20
Total		2.00	5	1.87	2.75	4	1.89	0.87	47	2.23	1.02	46	1.99
Reading Sounds	M	0.13	15	0.34	0.11	17	0.33	0.31	22	0.64	0.09	22	0.28
	F	0.61	13	1.65	0.33	12	0.88	0.16	24	0.63	0.04	21	0.20
Total		0.35	28	1.15	0.20	29	0.61	0.23	46	0.63	0.06	43	0.24
Mixed Sentences	M	0.00	0	0.00	1.00	1	0.00	0.09	22	0.28	0.12	24	0.44
	F	0.00	0	0.00	0.00	0	0.00	0.04	24	0.48	0.00	19	0.00
Total		0.00	0	0.00	1.00	1	0.00	0.06	46	0.24	0.06	43	0.33
Nonsense	M	0.00	0	0.00	0.00	0	0.00	0.05	20	0.22	0.04	23	0.20
	F	0.00	0	0.00	0.00	0	0.00	0.10	20	0.30	0.05	19	0.22
Total		0.00	0	0.00	0.00	0	0.00	0.07	40	0.26	0.04	42	0.20
Silhouette Auditory	M							1.04	22	2.08	1.11	26	2.35

Table 4, continued

Subtest	Sex	Pretest						Posttest					
		TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
		$\bar{x}$	n	s	$\bar{x}$	n	s	$\bar{x}$	n	s	$\bar{x}$	n	s
Silhouette Auditory (Con.t)	F							1.33	24	2.71	1.04	22	1.52
Total								1.19	46	2.40	1.08	48	1.99
Silhouette Visual	M							0.00	20	0.00	0.04	24	0.20
	F							0.00	22	0.00	0.00	20	0.00
Total								0.00	42	0.00	0.02	44	0.14
Recognition	M							2.68	22	1.45	2.08	25	1.31
	F							2.70	24	1.67	2.59	22	1.59
Total								2.69	46	1.55	2.31	47	1.45

Table 5

5 Year Olds: Means and Standard Deviations of Total Scores
On Pretest and Posttest

Subtest	Sex	Pretest						Posttest					
		TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
		$\bar{x}$	n	s	$\bar{x}$	n	s	$\bar{x}$	n	s	$\bar{x}$	n	s
Metropolitan Matching	M	5.10	37	3.24	4.14	42	2.56	6.10	28	2.75	6.06	30	2.48
	F	4.66	21	1.76	5.27	22	2.09	6.66	15	2.25	6.70	17	2.39
Total		4.94	58	2.79	4.53	64	2.45	6.30	43	2.57	6.29	47	2.44
Metropolitan Alphabet	M	8.05	37	5.27	7.42	42	5.78	8.85	28	4.94	9.03	30	5.47
	F	8.57	21	4.30	7.63	22	4.74	10.20	15	4.41	8.76	17	3.28
Total		8.24	58	4.91	7.50	64	5.40	9.32	43	4.75	8.93	47	4.76
Metropolitan Numbers	M	5.78	37	2.73	5.69	42	3.96						
	F	6.04	21	2.43	6.59	22	3.51						
Total		5.87	58	2.61	6.00	64	3.81						
Individual Letter Names	M	3.91	36	3.42	3.50	40	3.34	5.85	27	4.02	5.06	30	4.54
	F	3.95	21	3.13	4.22	22	2.40	6.86	15	3.56	5.35	17	2.95
Total		3.92	57	3.29	3.75	62	3.04	6.21	42	3.85	5.17	47	4.01

Table 5, continued

Subtest	Sex	Pretest						Posttest					
		TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
		$\bar{x}$	n	s	$\bar{x}$	n	s	$\bar{x}$	n	s	$\bar{x}$	n	s
Individual Letter Sounds	M	3.00	4	2.15	3.25	8	2.49	2.53	26	3.81	2.14	27	3.37
	F	0.00	2	0.00	2.00	3	1.73	3.21	14	3.90	1.00	17	2.00
Total		2.00	6	2.28	2.90	11	2.30	2.77	40	3.81	1.70	44	2.94
Reading Sounds	M	0.94	17	2.67	1.52	23	2.85	1.68	25	4.17	1.66	30	5.94
	F	1.41	12	2.96	0.54	11	1.50	3.00	15	8.17	0.31	16	1.01
Total		1.13	29	2.76	1.20	34	2.51	2.17	40	5.93	1.19	46	4.85
Mixed Sentences	M	0.00	1	0.00	1.00	1	0.00	0.20	25	0.40	0.16	30	0.45
	F	1.00	1	0.00	0.00	0	0.00	0.42	14	0.84	0.00	17	0.00
Total		0.50	2	0.70	1.00	1	0.00	0.28	39	0.60	0.10	47	0.37
Nonsense	M	14.00	1	0.00	4.00	1	0.00	0.58	24	1.63	0.28	28	1.50
	F	9.00	1	0.00	0.00	0	0.00	1.00	14	3.20	0.00	16	0.00
Total		11.50	2	3.53	4.00	1	0.00	0.73	38	2.30	0.18	44	1.20
Silhouette Auditory	M							2.77	27	3.27	1.86	29	2.94

Table 5, continued

Subtest	Sex	Pretest TEC Viewers $\bar{x}$	n	s	Pretest Non-Viewers $\bar{x}$	n	s	Posttest TEC Viewers $\bar{x}$	n	s	Posttest Non-Viewers $\bar{x}$	n	s
Silhouette Auditory (Con.t)	F							2.80	15	3.27	0.47	17	1.00
Total								2.78	42	3.23	1.34	46	2.49
Silhouette Visual	M							0.14	27	0.76	0.31	29	1.31
	F							0.50	14	1.87	0.00	17	0.00
Total								0.26	41	1.24	0.19	46	1.04
Recognition	M							2.55	27	1.67	2.76	30	2.32
	F							3.33	15	2.19	3.05	17	1.47
Total								2.83	42	1.88	2.87	47	2.04

Table 6

6 Year Olds: Means and Standard Deviations of Total Scores
On Pretest and Posttest

Subtest	Sex	Pretest						Posttest					
		TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
		$\bar{x}$	n	s	$\bar{x}$	n	s	$\bar{x}$	n	s	$\bar{x}$	n	s
Metropolitan Matching	M	10.90	11	2.91	8.85	7	3.07	11.00	7	1.00	8.71	7	3.68
	F	9.40	10	4.32	6.88	9	3.58	11.42	7	2.99	8.50	4	3.69
Total		9.76	21	3.57	7.75	16	3.41	11.21	14	2.15	8.63	11	3.50
Metropolitan Alphabet	M	13.81	11	3.57	13.28	7	3.81	12.71	7	4.57	13.85	7	3.67
	F	15.10	10	1.52	12.88	9	3.25	15.28	7	0.75	13.00	4	5.35
Total		14.42	21	2.80	13.06	16	3.39	14.00	14	3.41	13.54	11	4.10
Metropolitan Numbers	M	11.27	11	4.17	11.71	7	3.03						
	F	12.60	10	2.45	10.44	9	3.00						
Total		11.90	21	3.44	11.00	16	2.98						
Individual Letter Names	M	7.45	11	3.20	6.85	7	3.07	9.00	6	3.52	8.57	7	5.22
	F	8.00	10	1.41	6.88	9	3.14	11.14	7	1.21	8.00	4	5.29
Total		7.71	21	2.47	6.87	16	3.00	10.15	13	2.67	8.36	11	4.98

Table 6, continued

Subtest	Sex	Pretest						Posttest					
		TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
		$\bar{x}$	n	s	$\bar{x}$	n	s	$\bar{x}$	n	s	$\bar{x}$	n	s
Individual Letter Sounds	M	8.00	2	1.41	5.00	1	0.00	3.66	6	4.67	4.28	7	4.95
	F	7.00	2	1.41	10.00	1	0.00	9.42	7	2.87	6.50	4	4.65
Total		7.50	4	1.28	7.50	2	3.53	6.76	13	4.71	5.09	11	4.74
Reading Sounds	M	2.50	10	2.98	0.83	6	1.60	4.66	6	6.91	4.14	7	6.22
	F	2.66	9	2.29	3.62	8	4.50	7.14	7	7.31	11.50	4	12.23
Total		2.57	19	2.60	2.42	14	3.73	6.00	13	6.95	6.81	11	9.05
Mixed Sentences	M	0.00	0	0.00	0.00	0	0.00	0.33	6	0.81	0.71	7	0.94
	F	0.00	1	0.00	1.00	1	0.00	0.57	7	0.78	0.50	4	1.00
Total		0.00	1	0.00	1.00	1	0.00	0.46	13	0.77	0.63	11	0.92
Nonsense	M	0.00	0	0.00	0.00	0	0.00	1.50	6	2.34	0.42	7	1.13
	F	2.50	2	2.12	8.50	2	2.12	1.14	7	1.34	2.75	4	3.77
Total		2.50	2	2.12	8.50	2	2.12	1.30	13	1.79	1.27	11	2.53
Silhouette Auditory	M							3.00	6	3.94	4.42	7	4.39

Table 6, continued

Subtest	Sex	Pretest						Posttest					
		TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
		$\bar{x}$	n	s	$\bar{x}$	n	s	$\bar{x}$	n	s	$\bar{x}$	n	s
Silhouette Auditory (Con.t)	F							6.14	7	4.14	5.00	4	5.22
Total								4.69	13	4.21	4.63	11	4.45
Silhouette Visual	M							0.33	6	0.81	0.14	7	0.37
	F							0.42	7	1.13	2.00	4	4.00
Total								0.38	13	0.95	0.81	11	2.40
Recognition	M							3.50	6	2.73	4.57	7	2.29
	F							6.00	7	1.73	5.50	4	2.08
Total								4.84	13	2.50	4.90	11	2.16

analyses are shown in Table 7 and reflect the expected age differences with older children reading better than younger children. No differences between TEC viewers and non-viewers were found. Differences among the day care centers were found, with children from Day Care Center C scoring lower than the other five centers. Sex differences with girls scoring higher than boys were also noted.

Posttest Results

The attendance records maintained by the Viewing Assistants showed that the TEC viewers saw an average of 24 of the 39 TEC programs while non-TEC viewers saw an average of 25 of the other children's program. Means of the number of programs viewed reported by day care center, age level, sex, and viewing condition are shown in Table 8.

Means and standard deviations for those subtests on the posttest which had total scores are reported in Tables 4 through 6 for children at each age.

The posttest subtests which were common to the pretest were subjected to analysis of covariance, with pretest score on the variable being analyzed taken out as a covariate. Since so few children completed many of the subtests during the pretest, very few subtests were appropriate for these analyses. The results of these analyses are shown in Column II of Table 9. The only significant effect was attributable to age on the Metropolitan Matching subtest, with score increasing as age increased. No viewing condition differences were found.

Since it is possible that differences in number of programs viewed and the consequent differences in amount learned might obscure viewing condition differences, the posttest subtests were subjected to analyses of covariance with attendance taken out as a covariate. The results of

Table 7

Analyses of Variance on Pretest Subtests*

Dependent Variable	N	Significance Level of: DCC	AGE	SEX	VC
Metropolitan Matching	318	.001	.001	--	--
Metropolitan Alphabet	318	.001	.001	.05	--
Metropolitan Numbers	318	.001	.001	.01	--
Individual Letter Names	309	.001	.001	--	--

* All analyses involved the independent variables: Day Care Center(DCC), age, sex, and Viewing Condition (VC).

Table 8

Number of Programs Viewed

	Viewing Condition		Age				Sex		Day Care Center					
	TEC Viewers	Non-Viewers	4 Years	5 Years	6 Years	6+ Years	M	F	A	B	C	D	E	F
N	121	121	97	90	25	30	135	107	30	32	65	19	30	66
$\bar{x}$	24.39	25.32	26.49	22.77	27.04	24.12	25.63	23.87	22.90	26.68	23.51	31.29	26.44	23.63
s	12.13	10.82	7.77	9.41	8.19	12.94	10.93	12.03	8.82	6.36	9.92	5.25	10.63	10.61

Table 9

Analyses of Variance and Covariance on Posttest Items*

I		II**				III***					IV****				
		Significance Level of:					Significance Level of:					Significance Level of:			
Dependent Variable	N	DCC	AGE	SEX	VC	N	DCC	AGE	SEX	VC	N	DCC	AGE	SEX	VC
Metropolitan Matching	238	--	.001	--	--	241	.003	.001	--	--	185	.02	.001	--	--
Metropolitan Alphabet	234	--	--	--	--	237	.001	.001	.03	--	183	.001	.001	--	--
Individual Letter Names	235	--	--	--	--	248	.001	.001	.02	--	193	.001	.001	--	--
Individual Letter Sounds		For other posttest items, N became extremely small due to lack of pretest data, so analysis of covariance of these items with pretest score as covariate was terminated.				238	.001	.001	--	--	185	.001	.001	--	--
Sentence: He went home.						235	.02	.001	--	--	180	.05	.001	--	--
Sentence: The little toy is mine.						235	.02	.001	--	--	180	.05	.001	--	--
Sentence: Bob has Mary's cat.						235	--	.001	--	--	180	--	.001	--	--
Whose cat was it?						92	--	.001	--	--	68	--	.001	--	--
Nonsense sounds						225	--	.001	--	--	174	--	.001	--	--
Reading sounds						236	.002	.001	--	--	184	.005	.001	--	--
Silhouette Auditory Off show						183	.001	.001	--	--	141	.001	.001	--	--

Table 9, continued

I	II**					III***					IV ****				
		Significance Level of:					Significance Level of:					Significance Level of:			
Dependent Variable	N	DCC	AGE	SEX	VC	N	DCC	AGE	SEX	VC	N	DCC	AGE	SEX	VC
Silhouette Auditory On show						184	.01	.001	--	--	141	.001	.001	--	--
Messageman Off show						244	.001	.001	--	--	189	.001	.001	--	--
Messageman On show						242	--	.001	--	--	189	--	.001	--	--
Recognition words						244	--	.001	.02	--	184	.001	.001	--	--
Silhouette Convention						148	.001	.02	--	--	118	.02	.02	--	--

* All analyses involved the independent variables: Day Care Center (DCC), Age, Sex, and Viewing Condition (VC)

** Column II is analysis of covariance with pretest score as covariate.

*** Column III is analysis of covariance with number of times viewed as covariate.

**** Column IV is analysis of variance: only those who viewed at least 20 times.

these analyses are shown in Column III of Table 9. The most reliable differences were due to age; as age increased, reading ability increased. A few sex differences, with girls scoring higher than boys, were found. Several tests showed day care center differences which reflected the lower scores of children from Day Care Center C. No viewing condition differences were found.

Since analysis of covariance as a statistical control is not as satisfactory as experimental control, especially with unequal n's, analyses of variance were performed on the posttest subtests for those children who viewed 20 or more times. The results of these analyses are reported in Column IV of Table 9. Age differences and day care center differences were found with children from Center C again scoring lower than children from the other centers. No sex or viewing condition differences were found. Viewing condition differences were not significant even for those silhouette and Messageman items that had been on programs seen by viewers during the study.

As previous research has demonstrated effects due to length of viewing, data for those children who had viewed 35 or more times were analyzed. Because of the small number of children involved (N=25)* this data should be interpreted cautiously. TEC viewers gained more than non-viewers on: Metropolitan Matching for 6 year olds; Metropolitan Alphabet Letters for 4 and 5 year olds; alphabet letter names for all ages; reading sounds for all ages; and auditory silhouette blends for 4 and 5 year olds. To

* n=6 for 4 year old TEC viewers, n=7 for 4 year old non-viewers, n=4 for 5 year old TEC viewers, n=3 for 5 year old non-viewers, n=2 for 6 year old TEC viewers, and n=3 for 6 year old non-viewers.

summarize these data, TEC viewers who viewed 35 or more programs showed higher gains than non-viewers on 11 of the 15 comparisons. The differences were greater than those found in other analyses, but were based on fewer subjects.

The appropriateness of analysis of variance, and especially of analysis of covariance with widely differing n's, and for those items that were scored correct vs. incorrect is questionable. To test for viewing condition differences with a more appropriate technique, those subtests that were total scores (e.g., total letter names) were split at the median score and subjected to 2 X 2 Chi Square analyses involving at-or-above-the-median or below-the-median vs. TEC viewer or non-viewer. For items scored correct or incorrect (e.g., Whose cat was it) 2 Chi Square analyses involving correct or incorrect vs. TEC viewer or non-viewer were performed. None of these Chi Squares were significant, again indicating no differences because of viewing condition when using either total scores or individual item scores.

However, on most items TEC viewers scored higher than non-viewers. Therefore, on those posttest subtests containing enough items for a meaningful analysis, TEC viewers and non-viewers were compared using the binomial test.

Alphabet Letter Names and Sounds. As indicated in Appendix H, a higher percentage of 5 and 6 year old TEC viewers than non-viewers were able to both name and sound out the alphabet letters. For 5 year olds, the results favored TEC viewers in 11 of the 13 letter names ($p < .025$) and 12 of the 13 letter sounds ($p < .005$). For 6 year olds, the results favored TEC viewers in 11 of the 13 letter names and 11 of the 13 letter sounds ($p < .025$). Although more 4 year old TEC viewers scored correctly

on seven of the 13 letter names, and six of the 13 letter sounds, neither result was statistically significant.

The Letters j,t,b. Because the letters j, t, and b appeared on the TEC programs viewed by the children they were added to the individual test of alphabet names and sounds and results were examined separately. A higher percentage of TEC viewers than non-viewers were able to both name and sound these three letters. As indicated in Appendix H, at the 5 and 6 year age levels all six comparisons of both names and sounds favored TEC viewers. For the 4 year olds, the results favored TEC viewers in naming the b and sounding the j, t, and b, but not in naming the j and the t.

The Silhouette Subtest and Silhouette Convention. On the silhouette subtest, analagous to the program technique, the objective was to assess the children's ability to blend written sounds to produce a word.

If the child was not able to blend the silhouette words by reading them, the examiners spoke each of the syllables and asked the child to "put these together to make a word". While most of the children were not able to blend syllables when given the reading (visual) task only, several of them were able to blend when given the auditory cue. For example, as shown in Tables 4-6 over the ten silhouettes, the 4 year old TEC viewers averaged 1.19 blends, 5 year olds 2.78 blends and 6 year olds 4.69 blends. While there were not many differences in the responses to these ten items by TEC viewers and non-viewers at the 4 and 6 year old age levels, a larger percentage of 5 year old TEC viewers than non-viewers responded correctly to each of the ten silhouette blends using the auditory cue.

As shown in Appendix H, more 5 year old TEC viewers than non-viewers responded correctly to all ten items ($p < .005$). As shown in the posttest

scoring form (Appendix C), the examiners were asked to indicate if the child recognized the silhouettes as a technique which always indicated that sounds are put together to form words (blending). This was termed the Silhouette Convention. Table 10 shows the results of the item. Generally, differences between TEC viewers and non-viewers on this item were small and inconsistant.

Messageman Messages. The Messageman subtest consisted of six messages presented on separate cards which showed the Messageman character holding the messages. As indicated in Appendix H, very few of the children could read the messages correctly. Both viewers and non-viewers at each age level averaged less than one message correct. Except for 6 year old TEC viewers, both viewers and non-viewers scored somewhat higher on the messages which appeared on the TEC shows viewed. In considering the tables, it should be noted that scoring on these items ranged from one, indicating no response to the message, to five, read message correctly.

Selection Versus Production Tasks. On two subtests, seven of the same words were used for two objectives. First the words were included in the word recognition subtest where the child was to select the word from a series of four words. Then these same seven words were included in the reading words subtest where the child was asked to read the word printed on a card. The reading words were scored on the basis of the child correctly pronouncing specified letters of the word. (See Appendix H for recognition and reading subtests.) As shown in Table 11, more children were able to select the words from series than to produce the correct sounds.

Children 6+ Years Old. The older children ranged in age from 6 years

Table 10

Percentage of Children Recognizing the Silhouette Convention

	4 Years		5 Years		6 Years		6+ Years	
	TEC Viewers	Non-Viewers	TEC Viewers	Non Viewers	TEC Viewers	Non Viewers	TEC Viewers	Non Viewers
N	48	49	43	47	14	11	16	14
n	8	5	9	14	7	5	7	3
%	17	10	21	30	50	45	44	21

Table 11

Number and Percent of TEC Viewers and Non-TEC Viewers Who Responded Correctly **
To the Same Words on a Posttest Selection Task (Word Recognition)* and Production Task (Reading Words)

Word	Age Level	TEC Viewers						Non-Viewers					
		Recognition			Reading			Recognition			Reading		
		N	n	%	N	n	%	N	n	%	N	n	%
cube	4	45	21	47	45	0	0	47	13	28	42	0	0
	5	42	20	48	39	2	5	47	15	32	45	0	0
	6	13	5	38	13	1	8	11	3	27	11	3	27
chop	4	45	9	20	45	0	0	47	9	19	42	0	0
	5	42	8	19	39	1	3	46	12	26	45	2	4
	6	13	2	15	13	0	0	11	4	36	11	1	9
coat	4	45	11	24	45	0	0	45	11	24	42	0	0
	5	42	11	26	39	1	3	47	13	28	45	0	0
	6	13	3	23	13	2	15	11	6	55	11	1	9
snap	4	45	19	42	45	0	0	47	8	17	42	0	0
	5	42	13	31	39	2	5	47	12	26	45	1	2
	6	13	5	38	13	0	0	11	2	18	11	2	18
to	4	45	9	20	46	1	2	47	7	15	42	0	0
	5	42	6	14	39	3	8	47	7	15	45	2	4
	6	13	8	62	13	8	62	11	7	64	11	5	45
danger	4	45	6	13	45	0	0	47	12	26	42	0	0
	5	42	11	26	39	2	5	47	10	21	45	1	2
	6	13	7	54	11	0	0	11	7	64	11	2	18

* Child selected the word from a series of 4 words by pointing to the word.

** Child read the underlined letter(s) of the word correctly. Did not necessarily read the whole word correctly.

(pre-second graders) to 13 years (pre-eighth graders). The group included 39 children from four day care centers at pretest and dropped to 30 children at three day care centers at posttest. The age distribution of children at pretest and posttest was as follows:

Age in years	6	7	8	9	10	11	12	13
Number at Pretest	5	16	3	7	3	4	0	1
Number at Posttest	3	12	2	6	2	4	0	1

The instruments used were designed for 4, 5, and 6 year old children. As a result, the children older than 10 rarely missed any items (17 errors out of 1,396 items) and the children 6 to 9 years old made few errors. The data for the older children is presented in Table 12. The data for these children were included because they participated in the study and because they represent the age levels for which The Electric Company was designed. In examining this data the wide range of ages and small number of subjects should be considered.

Summary of Posttest Results. When the posttest means are ordered as to the level of difficulty for the children (see Table 13), it can be seen that for each age level the easiest tasks were matching pictures or words, selecting or naming letters of the alphabet, and selecting a word from a series. Tasks which required sounding out words (blending, chunking or scanning) were more difficult. Table 13 also indicates those subtests on which TEC viewers scored higher than non-viewers.

Although analyses of variance and covariance indicated no statistically significant differences attributable to viewing conditions, the data consistently favored TEC viewers. Upon examination using binomial tests, several significant differences in favor of TEC viewers were found. These

Table 12

Children 6+ Years: Means and Standard Deviations of Total Scores On Pretest and Posttest

Subtest	Sex	Pretest						Posttest					
		TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
		$\bar{x}$	n	s	$\bar{x}$	n	s	$\bar{x}$	n	s	$\bar{x}$	n	s
Metropolitan Matching	M	12.53	13	1.38	12.07	13	2.98	12.50	6	0.83	12.42	7	1.27
	F	12.00	6	2.09	12.85	7	1.06	13.40	5	1.34	13.66	3	0.57
Total		12.37	19	1.60	12.35	20	2.47	12.90	11	1.13	12.80	10	1.22
Metropolitan Alphabet	M	15.23	13	1.47	15.53	13	1.28	15.33	6	1.63	16.00	7	0.00
	F	16.00	6	0.00	16.00	7	0.00	16.00	5	0.00	15.66	3	0.57
Total		15.47	19	1.26	15.70	20	1.12	15.63	11	1.26	15.90	10	0.31
Metropolitan Numbers	M	14.46	13	5.02	15.76	13	2.71						
	F	16.50	6	2.07	17.42	7	0.52						
Total		15.10	19	4.35	16.35	20	2.32						
Inidividual Letter Names	M	9.69	13	0.62	9.69	13	0.47	11.80	10	2.81	12.66	9	0.50
	F	9.33	6	1.20	9.85	7	0.37	12.33	6	0.81	12.80	5	0.44
Total		9.57	19	0.83	9.75	20	0.43	12.00	16	2.24	12.71	14	0.46

Table 12, continued

Subtest	Sex	Pretest TEC Viewers $\bar{x}$	n	s	Pretest Non-Viewers $\bar{x}$	n	s	Posttest TEC Viewers $\bar{x}$	n	s	Posttest Non-Viewers $\bar{x}$	n	s
Individual Letter Sounds	M	9.50	2	0.70	8.50	2	0.70	10.90	10	2.46	11.55	9	1.87
	F	8.00	2	1.41	10.00	2	0.00	10.50	6	4.46	12.40	5	0.89
Total		8.75	4	1.25	9.25	4	0.95	10.75	16	3.21	11.85	14	1.60
Reading Sounds	M	10.23	13	3.08	9.92	13	3.49	31.40	10	8.75	31.11	9	10.33
	F	10.16	6	3.12	11.71	7	0.75	30.33	6	11.96	35.80	5	0.44
Total		10.21	19	3.00	10.55	20	2.94	31.00	16	9.69	32.78	14	8.44
Mixed Sentences	M	3.25	12	1.21	3.45	11	0.93	1.80	10	0.63	1.77	9	0.66
	F	4.00	5	0.00	3.85	7	0.37	1.66	6	0.81	2.00	5	0.00
Total		3.47	17	1.06	3.61	18	0.77	1.75	16	0.67	1.85	14	0.52
Nonsense	M	10.66	12	4.71	11.66	9	5.59	11.40	10	5.64	11.22	9	5.91
	F	12.60	5	3.91	14.14	7	1.95	12.33	6	6.08	15.00	5	0.07
Total		11.23	17	4.46	12.75	16	4.44	11.75	16	5.62	12.57	14	5.01
Silhouette Visual	M							5.66	3	2.08	6.25	4	3.86

Table 12, continued

Subtest	Sex	Pretest TEC Viewers $\bar{x}$	n	s	Pretest Non-Viewers $\bar{x}$	n	s	Posttest TEC Viewers $\bar{x}$	n	s	Posttest Non-Viewers $\bar{x}$	n	s
Silhouette Visual (Con.t)	F							9.00	1	0.00	0.00	0	0.00
Total								6.50	4	2.37	6.25	4	3.86
Recognition	M							8.80	10	1.87	9.11	9	1.05
	F							8.33	6	2.15	9.80	5	0.44
Total								8.62	16	1.92	9.35	14	0.92

Table 13

Posttest Means for TEC Viewers and Non-TEC Viewers by Age Level

Subtests (Rank ordered from least to most difficult)	Maximum Score	4 Year Olds				5 Year Olds				6 Year Olds			
		TEC Viewers		Non-Viewers		TEC Viewers		Non-Viewers		TEC Viewers		Non-Viewers	
		x	n	x	n	x	n	x	n	x	n	x	n
Metropolitan Alphabet	16	7.36	47	7.67	46	9.32*	43	8.93	47	14.00*	14	13.54	11
Metropolitan Matching	14	4.56	48	4.93	49	6.30*	43	6.29	47	11.21*	14	8.63	11
Individual Letter Names	13	3.75*	48	3.70	48	6.21*	42	5.17	47	10.15*	13	8.36	11
Recognition	10	2.69*	46	2.31	47	2.83	42	2.87	47	4.84	13	4.90	11
Silhouette Auditory	10	1.19*	46	1.08	48	2.78*	42	1.34	46	4.69*	13	4.63	11
Individual Letter Sounds	13	.87	47	1.02	46	2.77*	40	1.70	44	6.76*	13	5.09	11
Mixed Sentences	2	.06	46	.06	43	.28*	39	.10	47	.46	13	.63	11
Reading Sounds	36	.23*	46	.06	43	2.17*	40	1.19	46	6.00	13	6.81	11
Nonsense Words	16	.07*	40	.04	42	.73*	38	.18	44	1.30*	13	1.27	11

* Indicates higher mean for TEC viewers.

were: Individual Alphabet Letter Names for 5 and 6 year olds*; Individual Alphabet Letter Sounds for 5 and 6 year olds*, and Auditory Silhouette Blends for 5 year olds.

A summary of posttest results along with pretest results for major subtests is shown in Figure 1. A summary of posttest results for major subtests appearing only in the posttest phase is shown in Figure 2.

Fall Follow-up

To assess the effects of summer viewing of TEC which might last into the fall school term, 4, 5, and 6 year old TEC viewers and non-viewers were evaluated approximately two months after the fall term began. The evaluation took place in 38 public schools and the six day care centers.

There was less attrition of children from the posttest to the fall evaluation than was expected. Teacher questionnaires were returned for 186 of the 212 children at the 4, 5, and 6 year age levels. Only 26 of these children had moved away or could not be located in the Quad Cities area. Results of the fall follow-up are shown in Tables 14, 15, and 16.

Evaluation of the Children. The follow-up evaluations were administered to 175 children by project examiners. While analyses generally indicated no statistically significant differences between TEC viewers and non-viewers, there was a tendency for 4 year old TEC viewers to score higher than comparable non-viewers. For example, on the items listed in Table 15 more 4 year old TEC viewers than non-viewers responded correctly on 16 of the 22 items. This did not hold for 5 and 6 year olds.

When the evaluation results are considered in terms of the goals of

*Binomial tests on these items for pretest differences between TEC viewers and non-viewers showed no statistically significant differences.

Figure 1. Mean Percent Correct Responses to Pre- and Posttest Subtests

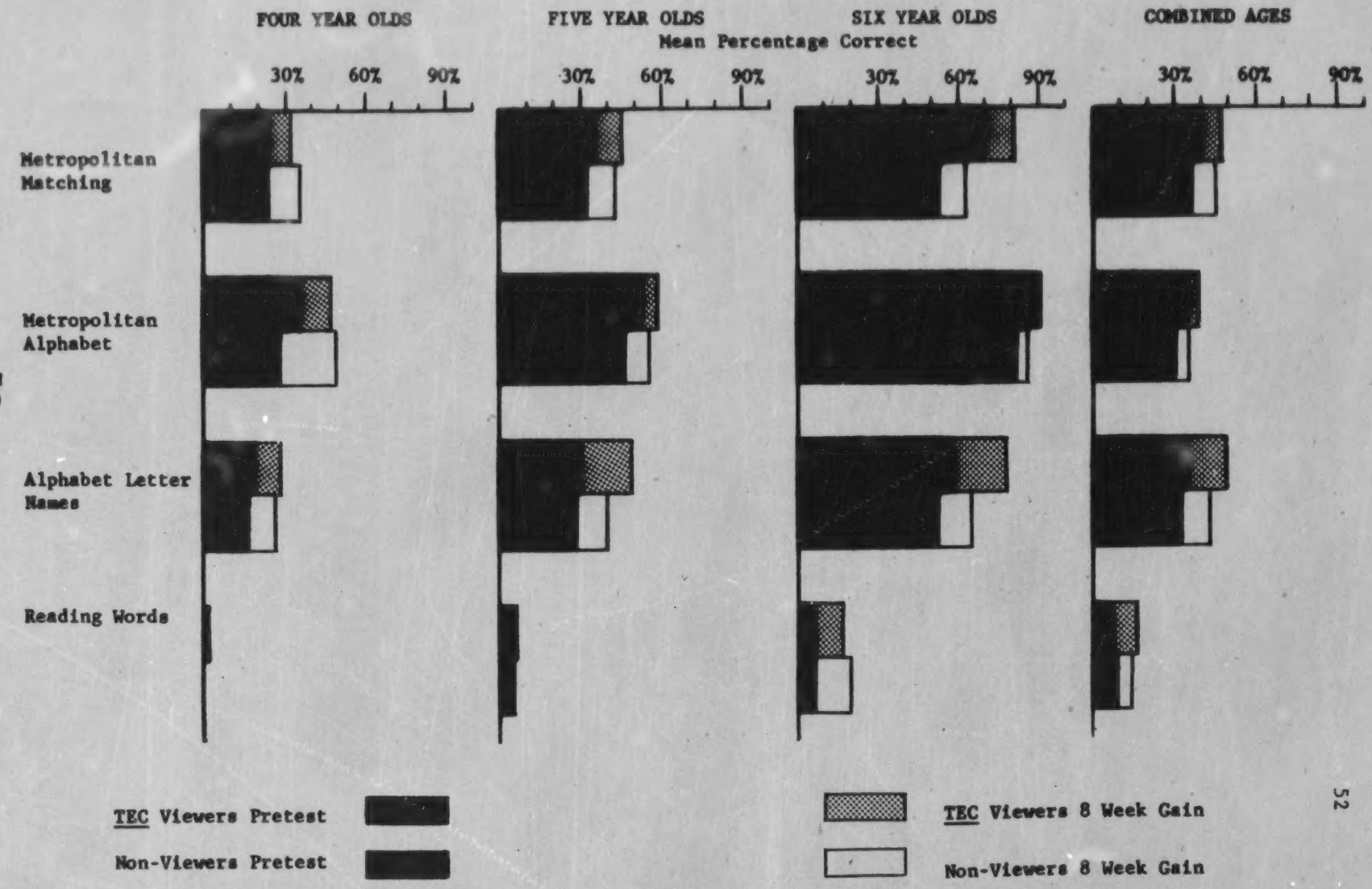
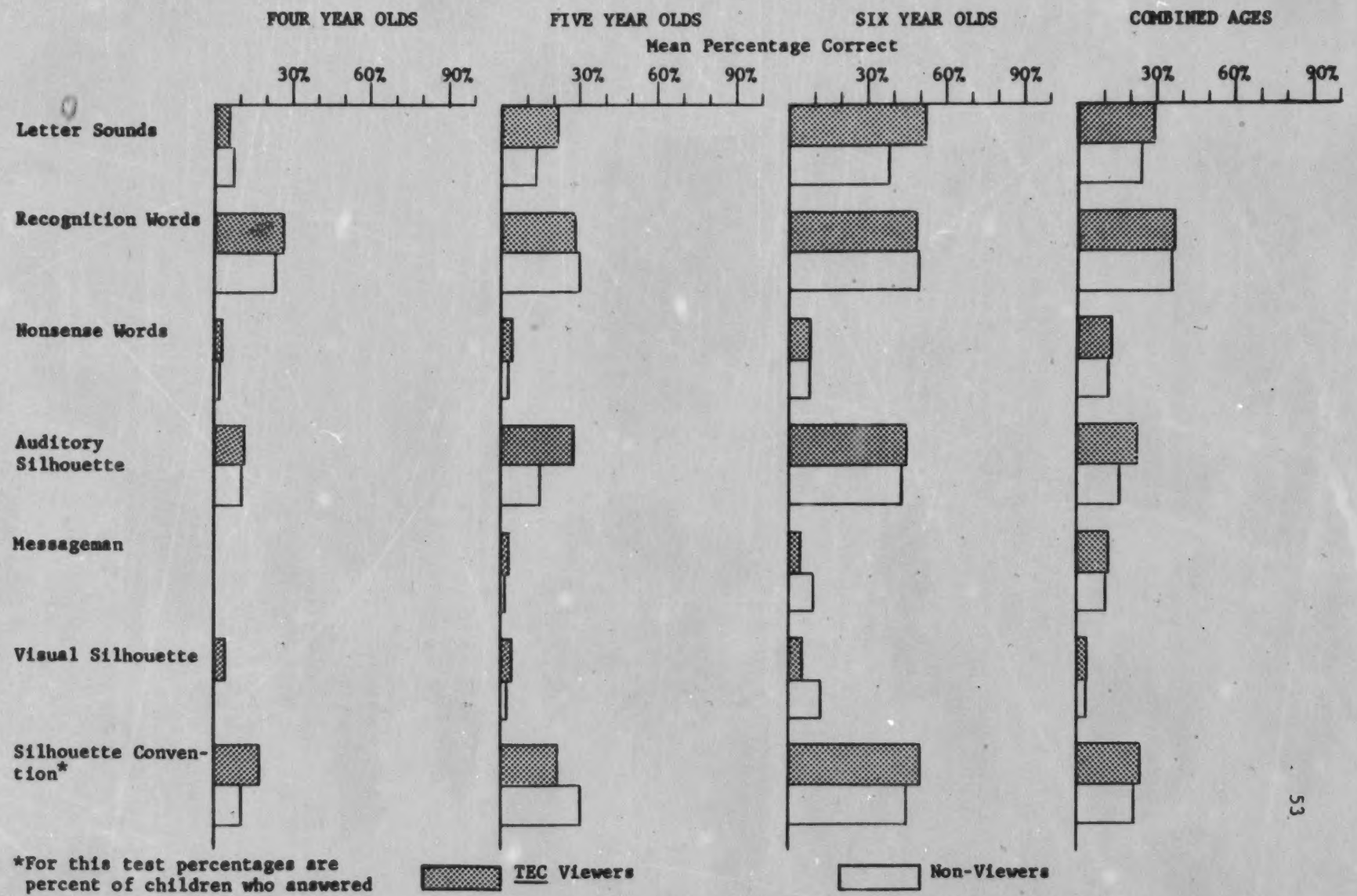


Figure 2. Mean Percent Correct for Posttest--Only Subtests



*For this test percentages are percent of children who answered correctly.

Table 14

Fall Follow-Up: Evaluation of Children
Means of Nonsense Words for TEC Viewers and Non-TEC Viewers

Nonsense Words	4 Year Olds		5 Year Olds		6 Year Olds	
	TEC Viewers N=41 $\bar{x}$	Non-Viewers N=39 $\bar{x}$	TEC Viewers N=35 $\bar{x}$	Non-Viewers N=39 $\bar{x}$	TEC Viewers N=13 $\bar{x}$	Non-Viewers N=8 $\bar{x}$
doil	1.07	1.16	1.40	1.36	1.93	1.88
ling	1.16	1.16	1.37	1.39	2.00	2.13
pight	1.15	1.16	1.37	1.46	1.93	1.88
hink	1.15	1.16	1.54	1.39	1.93	2.13

Table 15

Fall Follow-up: Evaluation of Children
Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Evaluation Items Correctly

	4 Year Olds				5 Year Olds				6 Year Olds			
	TEC Viewers N=41		Non-Viewers N=39		TEC Viewers N=35		Non-Viewers N=39		TEC Viewers N=13		Non-Viewers N=8	
Item	n	%	n	%	n	%	n	%	n	%	n	%
Sentence Completion/ selection	1	2	0	0	2	5	2	5	8	61	3	25
Sentence completion/ production	1	2	0	0	2	5	6	15	3	23	3	37
Left-to-right progression: reading	4	10	3	7	3	8	5	13	7	54	3	37
Left-to-right progression: pictures	25	60	17	43	30	86	28	72	12	92	7	88
Line-to-line progression: pictures	33	79	24	62	31	89	31	80	12	92	7	88
Left-to-right progression: writing	22	52	16	41	22	62	37	76	13	100	6	75
Written direction: sit	1	2	1	2	6	17	5	13	4	31	3	37
Written direction: run	3	7	2	5	4	12	3	8	4	31	3	37
Oral direction	40	95	37	95	34	97	37	95	13	100	8	100
Speech understood: name	39	93	34	87	32	91	39	100	13	100	8	100
Speech understood: address	38	90	31	80	32	91	37	95	13	100	8	100
Speech understood: like school	39	93	34	87	32	91	39	100	8	61	8	100
Speech understood: teacher's name	38	90	34	87	30	86	35	89	13	100	8	100
Repeats sound accurately	38	90	31	80	30	86	37	95	9	69	7	88
Relationship: up	36	86	34	87	34	97	39	100	13	100	8	100
Relationship: down	37	88	33	84	34	97	37	95	12	92	8	100
Relationship: under	39	93	36	93	35	100	38	97	13	100	8	100

Table 15, continued

Item		4 Year Olds TEC Viewers N=41 n	%	4 Year Olds Non-Viewers N=39 n	%	5 Year Olds TEC Viewers N=35 n	%	5 Year Olds Non-Viewers N=39 n	%	6 Year Olds TEC Viewers N=13 n	%	6 Year Olds Non-Viewers N=8 n	%
Relationship:	over	39	93	34	87	34	97	37	95	12	92	8	100
Relationship:	top	40	95	35	89	35	100	39	100	13	100	8	100
Relationship:	bottom	40	95	34	93	35	100	38	97	12	92	7	88
Relationship:	big	40	95	39	100	35	100	39	100	13	100	8	100
Relationship:	little	41	98	39	100	35	100	39	100	13	100	8	100

Table 16

Fall Follow-Up: Teacher Questionnaire
Means of Items for TEC Viewers and Non-TEC Viewers

Item	4 Year Olds				5 Year Olds				6 Year Olds			
	TEC Viewers		Non-Viewers		TEC Viewers		Non-Viewers		TEC Viewers		Non-Viewers	
	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
Sounds out words	.64	28	.90	30	.97	27	1.20	35	3.07	15	2.67	9
Meaning of words	1.33	27	.83	30	1.50	28	1.38	37	3.47	15	3.40	9
Line-to-line progression: reading	1.53	38	1.35	40	2.20	30	2.91	33	3.60	15	3.50	8
Left-to-right progression: reading	2.16	38	1.73	40	2.34	32	2.29	35	3.47	15	3.67	9
Left-to-right progression: writing	2.15	40	1.66	41	2.39	36	2.87	38	3.93	15	4.00	9
Meaning of written directions	1.16	32	.93	30	.96	26	1.15	33	3.07	15	3.38	8
Meaning of oral directions	3.36	42	3.15	41	3.16	37	3.86	42	4.00	15	4.11	9
Speech understood	3.67	42	3.15	41	3.41	37	3.98	42	3.87	15	4.11	9
Repeats sounds accurately	3.00	42	2.98	41	2.89	35	3.62	39	3.77	13	3.00	8
Relationships (up-down)	3.55	42	3.54	41	3.35	37	4.07	42	4.00	14	3.89	9
Reads labels	1.81	31	1.33	30	1.95	19	1.58	31	3.17	12	3.00	8
Associates symbols/ languages	1.56	32	1.45	33	1.77	31	1.63	30	3.67	15	3.22	9
Asks word meanings	2.38	40	1.98	40	2.03	35	2.51	39	3.14	14	2.51	8
Interested in letter shapes	2.53	36	2.08	39	2.94	36	2.72	39	3.50	12	2.71	7
Pays attention to teacher	3.07	42	2.78	41	2.89	37	3.10	42	3.60	15	3.11	9
Eager to attend school	3.51	41	2.90	39	2.28	36	3.73	31	4.15	13	4.00	8
Chooses books in free time	2.29	42	1.80	41	2.22	37	2.39	38	3.00	15	3.33	9
Predict reading ability	1.75	16	2.12	17	1.79	28	1.92	37	1.80	15	2.00	7
Predict academic perf.	1.75	16	2.00	17	1.82	28	1.92	36	1.87	15	1.88	8
Estimate of reading level	1.44	9	1.09	11	1.22	27	1.25	36	2.07	15	2.00	8

the show, the largest differences between TEC viewers and non-viewers occurred in two items measuring left-to-right progression and line-by-line progression when children were asked to tell the names of the "things" in pictures. More TEC viewers than non-viewers at each of the three age levels responded correctly to these items. A summary of the items concerning left-to-right and line-by-line progression can be seen in Figure 3.

Considering items which were intended to measure reading-for-meaning goals, few children were able to perform correctly on the two sentence completion items. Few children were able to read the two written directions---tested by asking the child to do what it said on the card.

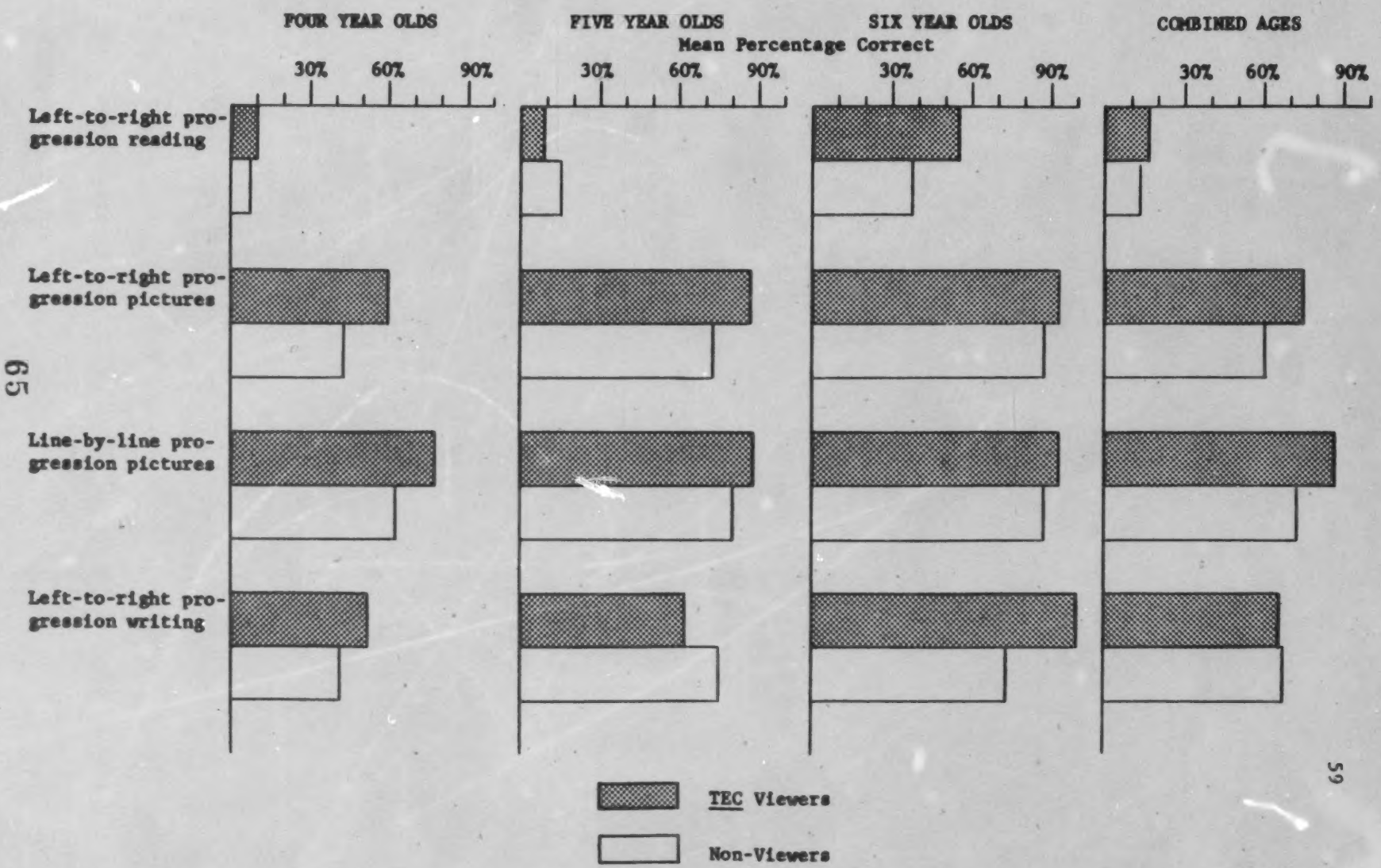
In addition, few children were able to read---or even sound out part of the four nonsense words (Table 14).

For items which measured behaviors not emphasized on the programs but related to reading, almost all of the children understood and complied with the oral direction to draw a circle, were easily understood when speaking, repeated a sequence of nonsense words accurately, and responded correctly when asked to demonstrate the items measuring relationships.

The Teacher Questionnaire. Although analyses of the teacher questionnaires indicated no statistically significant differences attributable to viewing condition, the results again favored the 4 year old TEC viewers. As Table 16 shows, of the 20 item means, 17 were higher for TEC viewers than non-viewers.

While the analysis of variance on selected items of the childrens' evaluation and the teacher questionnaire showed no significant viewing condition effects, age and day care center effects again appeared. As

Figure 3. Mean Percent Correct Responses to Fall Follow-up Children's Evaluation Items



in previous analyses, as age increased performance increased and children who had attended Day Care Center C scored lower than other children. On several analyses of the teacher questionnaire, but not on comparable items of the instrument administered to the children, a sex effect was found with girls superior to boys. However, it should be noted that the data gathered from the teacher questionnaires did not correlate highly with the actual measures of the same variables when the children were evaluated by experienced, trained examiners during the same time period the teachers completed the questionnaires. It is possible that in general, the teachers tend to rate girls higher than boys.

Summary of Fall Follow-up Results. Results of the evaluation of children in the fall, although not statistically significant, favored 4 year old TEC viewers with the largest differences occurring in left-to-right and line-by-line progressions. Results of the Teacher Questionnaire were also favorable to 4 year old TEC viewers but showed no differences between viewing conditions for 5 and 6 year old viewers.

Parent Questionnaire

Questionnaires were sent to the parents of each of the 318 children tested, and 151 (47%) were returned. Responses to the questionnaire showed no viewing condition differences or sex differences. There were age differences only on the items concerning viewing habits, with older children having viewed more years than younger children. The results are presented by day care center in Table 17 through 21. One result from the parent questionnaire would appear to account for finding so few differences between viewers and non-viewers in terms of reading skills gained from the systematic viewing of TEC. The two most popular shows, with the

Table 17

Parent Questionnaire: Mean of Educational Level* and Mean Employment** for Parents

Day Care Center	A		B		C		D		E		F	
Item	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n	$\bar{x}$	n
Mother's Education	3.94	16	3.63	19	2.76	33	3.54	13	3.62	13	3.19	26
Father's Education	4.00	22	3.78	18	2.00	19	3.45	11	4.11	9	3.06	18
Mother's Employment	3.56	27	3.58	21	2.70	37	3.62	16	3.73	15	3.50	32
Father's Employment	4.00	25	4.00	21	3.67	15	3.67	12	3.89	9	3.86	21

* 1=8th Grade, 2=9,10, or 11th Grade, 3=12th Grade, 4=1-2 yrs. college, 5=3-4 yrs. college.

** 1=not employed, 2=less than 10 hrs/week, 3=35 hrs/week, 4=more than 35 hrs/week.

(Note: Coding reversed from questionnaire.)

Table 18

Parent Questionnaire
Mean Number of Times Per Week Children Watch Specified Programs

Day Care Center	A	B	C	D	E	F
Program	N=27	N=21	N=38	N=18	N=15	N=32
Cartoons*	2.78	2.50	3.28	2.17	2.73	2.16
Captain Kangaroo	2.82	1.14	1.53	1.44	1.40	1.62
Sesame Street	3.07	3.05	2.99	2.89	3.80	2.44
The New Zoo Review	.66	.90	.76	1.17	.33	.34
Bozo's Circus	.41	.43	.96	.33	1.07	.16
The Electric Company	2.59	2.81	2.40	2.72	3.33	2.63
Hudson Brothers	.29	.53	.47	.78	.13	.38
Mr. Rogers	2.15	2.43	1.68	1.06	2.60	2.47
Globetrotters	.15	.33	.89	.28	.20	.53
Kukla, Fran and Ollie	.22	.19	.45	.78	.27	.53
Blue Marble	.04	.05	.03	.06	0	.34
Romper Room	1.15	.95	.87	1.28	.13	1.22
Ray Raynor	0	.10	.87	0	0	.47
Garfield Goose	.15	.33	.67	.11	0	.34

* Means for cartoons are underestimated because coding did not allow for the large number of cartoons aired weekly.

Table 19

Parent Questionnaire
Mean Number of Years Children Have Watched Specified Programs

Day Care Center	A	B	C	D	E	F
Program	N=27	N=21	N=38	N=18	N=15	N=32
Cartoons	2.36	2.29	2.50	2.22	2.60	2.84
Captain Kangaroo	2.44	1.86	1.08	1.78	1.47	2.21
Sesame Street	2.33	2.33	1.68	2.11	2.20	1.90
The New Zoo Review	.59	.29	.32	.61	.73	.13
Bozo's Circus	.11	.43	.69	.50	.47	.31
The Electric Company	1.52	1.62	1.13	1.17	1.33	1.53
Hudson Brothers	.44	.38	.34	.44	.13	.19
Mr. Rogers	1.29	1.67	.42	.89	1.07	1.26
Globetrotters	.26	.62	1.00	.33	.20	.56
Kukla, Fran and Ollie	.33	.38	.55	.56	.47	.53
Blue Marble	.19	.14	.13	0	0	.09
Romper Room	1.90	1.05	1.00	1.17	.33	1.31
Ray Raynor	0	.10	.32	0	0	.13
Garfield Goose	.04	.29	.37	.06	0	.13

Table 20

Parent Questionnaire
Percentage of Children and Parents who Possess Specified Items

Day Care Center	A	B	C	D	E	F
	N=27	N=21	N=38	N=18	N=15	N=32
Item	%	%	%	%	%	%
Child's Possessions						
Art Supplies	100	100	87	100	100	100
Toys	100	100	95	89	100	100
Books	100	100	95	100	87	100
Records/Tapes	85	76	45	50	73	79
Parent's Possessions						
Automobile	100	100	66	100	100	100
B/W TV	74	57	81	61	60	81
Clothes Dryer	81	81	50	67	73	88
Clothes Washer	85	81	60	83	73	88
Color TV	74	86	45	72	67	72
Dictionary	92	90	68	100	100	97
Dishwasher	40	38	10	22	47	47
Encyclopedia	55	48	19	56	60	50
Hi-Fi or phonograph	85	95	84	83	100	93
Musical Instrument	55	33	22	55	40	63
Oven	100	100	82	100	100	97
Refrigerator	100	100	87	94	100	100
Stove	100	100	92	100	100	100
Tape Recorder	64	57	40	55	33	44
Telephone	100	100	75	100	100	100
Still/Movie Camera	89	86	40	67	93	100

Table 21

Parent Questionnaire
Percentage of Children Who Like to Watch
Specified Types of Programs

Day Care Center	A	B	C	D	E	F
Item	N=27 %	N=21 %	N=38 %	N=18 %	N=15 %	N=32 %
Sports	37	43	19	61	19	47
News	7	10	11	17	7	19
Comedy	81	72	78	61	80	75
Educational	93	90	79	79	53	88
Soaps	3	9	21	0	0	12
Movies	52	57	61	56	53	66
Cartoons	94	100	87	89	100	88
Variety	93	62	72	78	67	66

exception of the category "cartoons," were CTW productions Sesame Street and The Electric Company. The children had viewed Sesame Street an average of 314 times before participating in the study, and The Electric Company had been viewed 192 times on the average. Thus, the children in both viewing and non-viewing conditions had had ample opportunity to learn about letters, numbers, and relationships from Sesame Street and to learn reading skills from The Electric Company. In fact, the controlled exposure to TEC during the study represented only an 18% increase in viewing TEC, given that both viewers and non-viewers continued to view TEC at home during the time period of the study.

Day Care Center C was notably lower in parent possessions and in father's education than the other centers. As these variables are generally included in socio-economic indices, it is not surprising that children from this center were lower in performance on both pre- and posttest variables. Although lower in average score, it seemed possible that TEC might have a greater effect in this day care center because of lower pretest scores indicating more room for improvement. Separate analysis of the data from this center showed TEC viewers slightly higher on Metropolitan Matching for 4, 5, and 6 year olds; non-viewers slightly higher on Alphabet letters, at all ages; TEC viewers slightly higher on Letter Names for 5 and 6 year olds; and TEC viewers slightly higher on Letter Sounds for 5 year olds. Differences between TEC viewers and non-viewers in Day Care Center C were consistent with the results as reported for all centers, but were smaller than in other centers. This would indicate that TEC viewers in this day care center did not make greater gains than in other centers.

The Childrens' Meta-Communication

Tables 22 and 23 summarize the results of the systematic observation of the childrens' meta-communication while viewing the programs. These data indicate that TEC viewers were more attentive to TEC than non-viewers were to the other childrens' program. TEC viewers also exhibited more reading behaviors, more verbal modelling, and less movement than did non-viewers. These differences were consistent across ages, sexes, and day care centers.

Examination of the individual items from the observations listed in Table 22 shows that non-viewers sought the Viewing Assistants' attention more often, talked more about non-program topics, and made more negative comments about the program than did TEC viewers. TEC elicited more laughter and more positive comments than the other program. While the difference between TEC viewers and non-viewers was not large for most of these variables, 11 of the 16 items favored TEC viewers and only three were greater for non-viewers as noted in Table 22. Two of these three would be expected because these items were more appropriate to the techniques used on the other program just as reading related items are more appropriate to TEC. These results indicate that the children found TEC more interesting than the other program, even though the other program was viewed at home almost as often as was TEC.

Group Observations. Generally, most of the children watched most of the programs most of the time. Specifically, the TEC viewers appeared more interested in The Electric Company than non-viewers were in their program. They cheered and hollered "Spiderman!" when the "Adventures of Spiderman" were announced. They sang the songs along with the program and their attention did not wander from the show. It was noted during

Table 22

Means of Averaged[1] Behaviors of Children Observed While They Viewed TEC and Non-TEC Programs

Behavior	TEC Viewers N=147 $\bar{x}$	n	Non-Viewers N=128 $\bar{x}$	n	Means Favorable to TEC	Means Favorable to Non-TEC
Attention to Program[2]	2.76	147	2.61	128	+	
Reading: Sounds	.06	36	.06	7		
Words	.10	69	.05	15	+	
Phrases/Sentences	.05	16	.06	4		+
Total Reading Behaviors	.13	77	.08	16	+	
Modeling: Sounds	.07	94	.06	37	+	
Words	.13	110	.07	55	+	
Phrases/Sentences	.05	50	.04	38	+	
Actions	.05	49	.06	69		+[3]
Total Verbal Modeling	.18	118	.09	89	+	
Total Verbal and Non-Verbal Modeling	.20	120	.11	101	+	
Answers Program Questions	.03	34	.09	66		+[4]
Positive Comments about Program	.09	78	.08	63	+	
Negative Comments about Program	.04	23	.06	27	+	
Offers Information to T.V.	.09	58	.09	61		
Non-Program Related Talk	.05	71	.08	79	+	
Laughs at Program	.10	95	.07	59	+	
Seeks Viewing Assistants' Attn.	.07	28	.09	26	+	
Moves Around[2]	1.00	138	1.08	122	+	

1. Behaviors were averaged over the number of program segments observed.
2. 1=little or none; 2=some; 3=great amount.
3. The audience is often asked to imitate actions portrayed on the non-TEC program.
4. Many questions are posed to the audience on the non-TEC program.

Table 23

Means and Standard Deviations of Averaged* Behaviors of Children Observed While Viewing TEC and Non-TEC Programs for Specified Variables

Variable	Attention			Total Reading Behaviors			Total Verbal Modeling			Mobility		
	$\bar{x}$	n	s	$\bar{x}$	n	s	$\bar{x}$	n	s	$\bar{x}$	n	s
Viewing Condition: TEC Viewers	2.76	147	.25	.13	77	.14	.18	118	.15	.97	138	.43
Viewing Condition: Non Viewers	2.61	128	.26	.08	16	.11	.09	89	.09	1.08	122	.46
Day Care Centers												
A	2.73	38	.18	.08	7	.07	.13	31	.11	1.23	38	.15
B	2.77	35	.23	.05	8	.02	.07	26	.05	1.12	35	.13
C	2.58	66	.27	.12	11	.12	.15	43	.16	.38	52	.48
D	2.76	19	.37	.12	10	.13	.20	18	.17	1.06	18	.23
E	2.71	41	.32	.15	12	.17	.21	25	.17	1.28	41	.33
F	2.71	76	.22	.14	45	.15	.14	64	.10	1.15	76	.29
Age Level												
4	2.69	107	.23	.08	24	.07	.12	78	.10	1.02	100	.43
5	2.66	101	.29	.10	34	.14	.15	83	.13	1.00	98	.47
6	2.72	31	.28	.24	15	.21	.20	24	.20	.89	26	.56
6+ Years	2.74	36	.29	.13	20	.11.	.16	22	.13	1.22	36	.27
Sex												
M	2.71	164	.26	.12	52	.15	.14	128	.11	1.09	157	.43
F	2.67	111	.27	.12	41	.13	.15	79	.16	.93	103	.46

* Behaviors were averaged over the number of program segments observed.

the observations that many humorous parts of The Electric Company which made the adult Viewing Assistants and the observer laugh did not have any effect on the children. While they did laugh frequently, it appeared that much of the humor was too sophisticated for the children. The non-TEC viewers also sang with their program, talked back to the program, and imitated the movements demonstrated on the show. Non-TEC viewers tended not to watch lengthy program segments, became restless more frequently and their overall attention to their program was shorter. These observations coincide with both the Viewing Assistants' unsolicited comments and the data on the forms for observation while viewing.

Interviews with the Children

The results of the content analysis of the recorded interviews with the children are reported in Table 24. In response to the two questions, "What is the TV show The Electric Company about?" and "What could another child learn from The Electric Company?" more children referred to words and alphabet letters than to the other reading related categories. TEC characters were referred to, with Spiderman being the most popular referent. The most frequently occurring reference to TV techniques was in the category of animation/cartoons.

While both TEC viewers and non-viewers were aware that TEC was about reading, more viewers than non-viewers referred to topics related to reading and learning.

Interview: Content Analysis
of TEC Viewers and Non-TEC Viewers' Responses
to Two Questions*About TEC: Number of
Children Who Referred to Each Topic

Topics	Viewing Condition: TEC Viewers N=74 Q1	TEC Viewers N=74 Q2	Non-Viewers N=74 Q1	Non-Viewers N=74 Q2
Reading Related				
Sounds	3	4	0	4
Words	12	12	4	5
Reading	2	8	0	7
Meaning of Words	1	3	0	0
Alphabet Letters	6	5	4	0
Spelling	1	9	2	2
Shape of Words	0	1	0	0
Sentences	0	2	0	0
Punctuation Marks	1	1	0	0
English/Talk Better	0	2	0	1
Other Learning Related				
Writing	0	3	0	1
Numbers/Counting	3	7	0	1
Teaching, Thinking, Learning (No reference to reading)	5	6	1	4
Sesame Street related	3	1	2	1
TEC Related				
Spiderman	12	3	5	2
Road Runner	0	0	1	0
Messageman	0	0	1	0
Letter Man	3	0	1	0
Other Characters	8	1	4	2
General Reference to TEC	9	6	2	5
Reference to TEC Incident	6	2	2	2
TV Techniques				
Animation/Cartoons	4	1	3	0
Music/Dance	1	1	4	1
Humor	2	2	3	1
Not Specific to TEC				
Stories, Pictures	5	2	6	1
Stuff/Things/Play	10	14	11	7
People's Movements/Emotions	2	1	1	0
People/Boys/Girls	11	4	6	6
The Non-Viewers' Program	3	1	9	5
I don't know.	14	12	18	13

*Question 1: What is the TV program The Electric Company about?
Question 2: What can another child learn from The Electric Company?

Chapter Five

CONCLUSIONS

The conclusions listed below are based on the researchers' interpretations of both the data and what was observed by them in the day care centers during the study.

1. Do 4, 5, and 6 year old children exhibit reading skills as a result of systematically viewing The Electric Company?

   Generally, the results of the posttest favored TEC Viewers. On the majority of the subtests, TEC viewers scored slightly, but not significantly higher than non-viewers (refer to Figures 1 and 2, combined ages). The most consistent results in the posttest occurred in the simple reading tasks; naming and sounding alphabet letters; and blending words when given an auditory cue. Few TEC viewers or non-viewers were able to perform well on the more complex tasks requiring sounding out words.

2. Do the effects of the program last after the children enter school?

   In general, the results of the fall follow-up tended to favor TEC viewers slightly, but not significantly. The most consistent

results of the fall follow-up evaluation of the children occurred in two TEC goal areas, left-to-right and line-by-line progression, again the simple tasks. At the 4 and 5 year old ages, the greatest differences between TEC viewers and non-viewers occurred on left-to-right and line-by-line progressions with pictures as test items. While 6 year old TEC viewers performed better than non-viewers on both progression tasks with pictures, the largest differences between 6 year old TEC viewers and non-viewers occurred with reading and writing progression tasks.

3. Do the effects of viewing The Electric Company differ for 4, 5, and 6 year olds?

The data are inconclusive and somewhat contradictory for adequate interpretation of differential age effects. Overall, it appeared that all ages improved at similar rates. On specific subtests, different ages improved at different rates, with no consistent pattern of differential age improvement emerging.

4. How does the frequency of systematically viewing The Electric Company affect reading related behaviors?

There is no strong evidence from this study that indicates that acquisition of reading related skills is a function of the number of times TEC is systematically viewed. No significant differences between TEC viewers and non-viewers were found when the data for only those children who viewed 20 or more programs were analyzed. When data from children who viewed 35-39 programs were examined, TEC viewers were favored, but the number of subjects was too small to consider this a strong trend.

Thorndike (1975) has pointed out the documented increase in

I.Q. scores of pre-schoolers whom he refers to as the "Sesame Street generation." It is possible that the children in this study, certainly members of the Sesame Street generation, who watched both Sesame Street and The Electric Company frequently at home, entered the study with a high level of reading skills for their ages. If so, a greater amount of exposure to TEC than the study could manage in the time allotted might be required for improvement of reading skills. The average of 24 TEC programs viewed may not have been a sufficient number to have a dramatic effect.

5. Does The Electric Company appeal to 4, 5, and 6 year old children? Yes! Based on the systematic observations of the Viewing Assistants, their unsolicited comments, and those of the day care center directors along with the observations of project personnel, TEC was extremely appealing to these children. The childrens' eyes were glued to the screen, they were relatively immobile (except for displaying exuberance during Spiderman segments), and they laughed frequently. These reactions were not elicited to such a degree by the other childrens' program.

As noted earlier, much of the humor appeared to be too sophisticated for these age levels, and we strongly suspect for the age levels of the target audience although it seemed appropriate for adults.

Previous research has indicated that the target audience of second through fourth graders learn reading skills as a result of viewing The Electric Company. Considered overall, the results of this study indicate

that younger children, who are definitely among The Electric Company's audience and are certainly enthusiastic about the program, may also be learning reading related skills from The Electric Company.

Recommendations for Future Research

If Children's Television Workshop should conduct further research with young children viewing TEC, the researchers suggest consideration of the following points which are based on the procedures and outcomes of this study.

1. Given the high frequency of home TEC viewing, locating an appropriate control group will probably continue to be a vexing problem. Although a difficult task, an attempt might be made to conduct a study where control of home TEC viewing can be maintained.

2. If possible, more programs should be viewed by the TEC viewing group.

3. Individually administered tests should be included.

4. Test items should be at appropriate difficulty levels and should include a sufficient number of simple tasks.

5. The children were enchanted with the Messageman and Silhouette drawings used on the posttest. This type of test format seems to be particularly useful for maintaining the attention of young children.

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APPENDIX A

The Electric Company Curriculum Goals

THE ELECTRIC COMPANY

CURRICULUM GOALS

1971-72 Season

Children's Television Workshop
August, 1971

THE ELECTRIC COMPANY

CURRICULUM GOALS, 1971-72

About the Written Code: The Approach of the Show

Implicit throughout the show will be an attitude toward the written code which stresses its reasonableness and learnability. The following principles will be emphasized:

(1) The left-to-right sequence of print corresponds to the temporal sequence of speech.

(2) Written symbols stand for speech sounds.

(3) This relationship is sufficiently reliable to produce successful decoding most of the time.

(4) Reading is facilitated by learning a set of strategies for figuring out this symbol-to-sound relationship.

(5) However, the goal of decoding is to extract meaning from written messages; the reader's job is not completed with the "sounding-out" of a word or sentence.

I. Strategies for Symbol/Sound Analysis

The objective is to teach the child some of the most essential pieces of the written code, relating these to the processes of decoding. Each symbol/sound correspondence will be taught in the context of a syllable, word or phrase.

A. Processing Linear Combinations, or Blending

The child can demonstrate his knowledge of individual letter/sound correspondences by blending the sounds in simple linear sequence to produce intelligible words. He can do this following a simple blending model (r-a-n) or a word family model (m-an, r-an).

1. Consonants

b (as in bag)
c (as in cat and as in city)

d (as in dog)
f (as in fig)
g (as in got and as in gin)
h (as in hot)
j (as in jet)
k (as in kiss)
l (as in lot)
m (as in map)
n (as in nap)
p (as in pot)
qu (as in quit)
r (as in rot)
s (as in sit)
t (as in top)
v (as in vat)
w (as in won)
x (as in extra)
z (as in zoo)

2. Vowels

a (as in rat)
e (as in met)
i (as in bit)
o (as in hot)
u (as in cut)
y (as in dry and as in happy)

3. Consonant Blends* (initial and final)
Most frequently used:

bl-, br-, cl-, cr -, -ct, dr-, -ft, gr-, -nd,
-nt, pl-, pr-, sk-, -sk, sp-, -sp, st-, -st, tr-

*Since consonant blends can be sounded out letter by letter, the blending principle will be stressed in teaching them. The entire list will not necessarily be taught.

B. Processing Letter Groups as Units ("Chunks")

The child can recognize certain groups of letters as single units and process them as such when sounding out words. For example:

1. Vowel Combinations

ai (as in b<u>ai</u>t)
ay (as in d<u>ay</u>)
ea (as in n<u>ea</u>t)
ee (as in s<u>ee</u>)
ie (as in d<u>ie</u> and as in th<u>ie</u>f)

oa (as in boat)
oi (as in boil)
oo (as in food and as in good)
ou (as in found)
ow (as in know and as in cow)
oy (as in toy)

2. Consonant Diagraphs

ch (as in chop)
ph (as in phone)
sh (as in ship)
th (as in thin and as in this)

3. Controlled Vowels

ar (as in car)
er (as in fern)
ir (as in bird)
ur (as in burn)

4. Larger Spelling Patterns

-all (as in tall)
-alk (as in talk)
-igh(t) (as in high and as in night)
-ing (as in sing)
-tion (as in action)

5. Sight words*

to
the
of
if
for
was
you
who
what
walk
stop

*Although we expect that most of the above words will be covered, the choice of sight words will be left up to the producers, following the general principle that words chosen are (a) of high frequence in reading (THE, OF), (b) of high frequency in the environment (STOP, WALK, SCHOOL), (c) or are interesting words (SCRAM). Sight words will be taught non-analytically as whole words.

Some phonically regular words, which are taught

analytically, will also be presented for sight recognition in order to emphasize that the end product of sounding out is to read whole words as units.

C. Scanning for Structure

The child recognizes the following structural spelling patterns and can successfully read words containing them:

1. Final e Signalling a "Long"* Vowel Sound

mate	(vs. mat)
Pete	(vs. pet)
bite	(vs. bit)
note	(vs. not)
cute	(vs. cut)

2. Double Consonant Signalling a "Short"* Vowel Sound

latter	(vs. later)
petter	(vs. Peter)
bitter	(vs. biter)
totter	(vs. toter)
cutter	(vs. cuter)

3. Open Syllable Signalling a "Long"* Vowel Sound

he	(vs. hem)
hi	(vs. hit)
no	(vs. not)

*These terms will not be taught.

II. Strategies for Reading for Meaning

The general objective here is to convey to the child that the ultimate goal of decoding is to reconstruct the intended meaning; his job is not completed with phonic analysis alone. Reading will be presented as a problem-solving endeavor, in which the purpose is to extract meaning.

This attitude will be fostered in the child in two ways: first, by supporting decoding efforts with meaningful context; second, by teaching the child some reliable meaning signals, and some strategies for utilizing them in interpreting phrases and sentences.

Since many of the critical morphemic and syntactic features of written Standard English are absent, or realized in a different form in non-standard speech, testing procedures will not require the production of these features in speech as a criterion for mastery. For example, a test of morpheme mastery might be constructed as follows:

played Yesterday John football. plays

The order in which the skills below are presented does not imply a hierarchy of complexity or a behavior sequence. These skills are necessarily used in combination in the process of reading for meaning.

A. Processing Morphemes as Meaning Units ("Chunks")

The child can interpret some high-frequency Standard English morphemes, when presented in an appropriate context. For example:

-ed	
-er, -est	(comparative and superlative adjectives)
-ing	
-ly	(adverbial)
-n't	(negative contraction)
-s	(plural)
-s	(3rd person singular)
-'s	(contraction)
-'s	(possessive)
un-	

B. Scanning for Structure

1. The child can read the words in a phrase or sentence in linear order, and rehearse them, if necessary, until they combine in an approximation of spoken language which allows him to derive the meaning of the phrase or sentence.

2. The child can use his knowledge of certain syntactic structures of spoken English to derive the meaning of a phrase or sentence. For example:

   a. Given the context, "The_____is pretty," the child can supply a noun* or noun phrase.*

   b. Given the context, "The boy_____the ball," the child can provide a verb* or verb phrase.*

   c. Given the context, "The man walks_____," the child can provide a prepositional* or adverbial phrase.*

   d. Given the context, "The_____flower is pretty," the child can provide an adjective* or adjectival phrase.*

   e. Given a scrambled sentence, the child can arrange it in a meaningful order.

*These terms will not be taught.

3. The child can utilize the following punctuation cues in interpreting sentences:

   a. A sentence begins with a capital letter.

   b. A sentence ends with a, ., a ?, or an !, providing information about its meaning.

   c. Quotation marks indicate direct speech.

C. Using Context Clues

The child can use context clues to guess as an unfamiliar word in order to complete his understanding of the phrase or sentence in which it occurs.

1. Given a phrase or sentence containing a word which he cannot sound out, but which is in his spoken vocabulary, the child can use contextual clues to guess at the identity of the word, and check his guess for a plausible relation to the spelling of the word in question.

2. Given a phrase or sentence containing a word which he can sound out, but which is not in his spoken vocabulary, the child can use contextual clues to determine a probable meaning for the word.

3. Given a phrase or sentence containing a word which he cannot sound out, and which is not in his spoken vocabulary, the child can use contextual clues to determine the probable meaning for the word, even though he cannot pronounce it.

APPENDIX B

Pretest

Child's Name_____

Day Care Center_____

INDIVIDUAL TEST

1. Alphabet

	Name	Sound
a	+ -	+ -
d	+ -	+ -
h	+ -	+ -
i	+ -	+ -
m	+ -	+ -
o	+ -	+ -
p	+ -	+ -
w	+ -	+ -
x	+ -	+ -
z	+ -	+ -

2. Reading Words

	Sound			
1. lot	l	+	-	?
	o	+	-	?
	t	+	-	?
2. say	ay	+	-	?
3. rake	r	+	-	?
	a	+	-	?
4. chin	ch	+	-	?
5. play	pl	+	-	?
6. by	y	+	-	?
7. stem	st	+	-	?
8. help	lp	+	-	?
9. toil	oi	+	-	?

3. Dolch Sight Words (Pre-Primer)

a	a	+	-	?
and	a	+	-	?
away	ay	+	-	?
big	b	+	-	?
blue	bl	+	-	?
can	c	+	-	?
come	c	+	-	?
down	ow	+	-	?
find	nd	+	-	?
for	f	+	-	?
funny	y	+	-	?
go	g	+	-	?
help	lp	+	-	?
here	h	+	-	?
I	I	+	-	?
in	i	+	-	?
is	s	+	-	?

Dolch Sight Words (Pre-Primer) Con.'t.

it	t	+	-	?
jump	mp	+	-	?
little	tt	+	-	?
look	oo	+	-	?
make	k	+	-	?
me	m	+	-	?
my	y	+	-	?
not	n	+	-	?
one	o	+	-	?
play	pl	+	-	?
red	r	+	-	?
run	n	+	-	?
said	ai	+	-	?
see	ee	+	-	?
the	th	+	-	?
three	thr	+	-	?
to	t	+	-	?
two	tw	+	-	?
up	p	+	-	?
we	w	+	-	?
where	wh	+	-	?
yellow	ll, ow	+	-	?

4. Dolch Sight Words (Primer)

all	a	+	-	?
am	m	+	-	?
are	r	+	-	?
at	a	+	-	?
ate	a	+	-	?
be	b	+	-	?
black	bl, ck	+	-	?
brown	br	+	-	?
but	b	+	-	?
came	c	+	-	?
did	d	+	-	?
do	d	+	-	?
eat	e, t	+	-	?
four	f	+	-	?
get	g	+	-	?
good	oo	+	-	?
have	h	+	-	?
he	h	+	-	?
into	in	+	-	?
like	i	+	-	?
must	st	+	-	?
now	ow	+	-	?
no	n	+	-	?
on	o	+	-	?
our	ur	+	-	?

Dolch Sight Words (Primer) Con.'t

out	ou	+	-	?
please	pl	+	-	?
pretty	pr	+	-	?
ran	r	+	-	?
ride	ri	+	-	?
saw	aw	+	-	?
say	ay	+	-	?
she	sh	+	-	?
so	s	+	-	?
soon	oo	+	-	?
that	th	+	-	?
there	th	+	-	?
they	th	+	-	?
this	th, i	+	-	?
too	oo	+	-	?
under	un	+	-	?
want	nt	+	-	?
was	w	+	-	?
well	ll	+	-	?
went	nt	+	-	?
what	wh	+	-	?
while	wh	+	-	?
who	wh	+	-	?
will	ll	+	-	?
with	th	+	-	?
yes	y	+	-	?

5. Sentences

1. He went home.

he	+	-	?	
went	+	-	?	
home	+	-	?	
In order	Yes		No	?

2. The little toy is mine.

the	+	-	?	
little	+	-	?	
toy	+	-	?	
is	+	-	?	
mine	+	-	?	
In order	Yes		No	?

6. Mixed Order

1. big I am	+	-	?
2. boy tall is the	+	-	?
3. sees red he house a	+	-	?
4. walks town the she to	+	-	?

7. Nonsense Words

		Sound			
1.	lin	l	+	-	?
		i	+	-	?
2.	doy	oy	+	-	?
3.	ming	ing	+	-	?
4.	skep	sk	+	-	?
		e	+	-	?
5.	moil	oi	+	-	?
6.	thern	th	+	-	?
		ern	+	-	?
7.	tader	a	+	-	?
8.	bine	i	+	-	?
9.	dight	ight	+	-	?
10.	shar	sh	+	-	?
		ar	+	-	?
11.	nink	nk	+	-	?
12.	radder	a	+	-	?

THE ELECTRIC BATTERY INDIVIDUAL TEST AS IT APPEARS IN THE ELECTRIC BATTERY

INDIVIDUAL TEST

READING WORDS

		sound		228	
1.	lot	l	+	-	?
		o	+	-	?
		t	+	-	?
2.	say	ay	+	-	?
3.	rake	r	+	-	?
		a	+	-	?
4.	chin	ch	+	-	?
5.	play	pl	+	-	?
6.	by	y	+	-	?
7.	stem	st	+	-	?
8.	help	lp	+	-	?
9.	toil	oi	+	-	?

NONSENSE WORDS

		sound		240	
1.	lin	l	+	-	?
		i	+	-	?
2.	doy	oy	+	-	?
3.	ming	ing	+	-	?
4.	skep	sk	+	-	?
		e	+	-	?
5.	moil	oi	+	-	?
6.	thern	th	+	-	?
		ern	+	-	?
7.	tader	a	+	-	?
8.	bine	i	+	-	?
9.	dight	ight	+	-	?
10.	shar	sh	+	-	?
		ar	+	-	?
11.	nink	nk	+	-	?
12.	radder	a	+	-	?

SENTENCES

1. He went home.	he	+	-	?
	went	+	-	?
	home	+	-	?
	In order	Yes	No	?
2. The little toy is mine.	the	+	-	?
	little	+	-	?
	toy	+	-	?
	is	+	-	?
	mine	+	-	?
	In order	Yes	No	?

MIXED ORDER

1. big I am	+	-	?
2. boy tall is the	+	-	?
3. sees red he house a	+	-	?
4. walks town the she to	+	-	?

APPENDIX C

Posttest

Child's Name_____ Day Care Center_____

Date_____ Tester's Name_____

NOTE: TESTER RESPONSE ON ALL ITEMS EXCEPT THOSE IN SECTION B IS "GOOD" FOR CORRECT, "O.K." FOR ANY OTHER RESPONSE.

A. Alphabet (13 letters)

Say: WE'RE GOING TO LOOK AT SOME LETTERS. Show child letters on cards one at a time. Q: WHAT LETTER IS THIS? Show child cards a second time. Q: WHAT SOUND DOES THIS LETTER MADE?

Scoring: Circle + for correct, - for incorrect and ? for no response or "don't know."

		Name	Sound
1.	a	+ - ?	+ - ?
2.	d	+ - ?	+ - ?
3.	h	+ - ?	+ - ?
4.	i	+ - ?	+ - ?
5.	m	+ - ?	+ - ?
6.	o	+ - ?	+ - ?
7.	p	+ - ?	+ - ?
8.	w	+ - ?	+ - ?
9.	x	+ - ?	+ - ?
10.	z	+ - ?	+ - ?
11.	j	+ - ?	+ - ?
12.	t	+ - ?	+ - ?
13.	b	+ - ?	+ - ?

B. Silhouette (10 words)

Present child with each card and say: WHAT ARE THEY SAYING? If child is unable to respond show child all the cards again and say: EX. SM-OG PUT THESE TOGETHER TO MAKE A WORD.

Note: Tester response after each item should be O.K. whether item is correct or not.

Scoring: Circle + for correct, - for incorrect and ? for no response or "don't know."

		Visual only	With Auditory Cue
1.	D-og	+ - ?	+ - ?
2.	D-ig	+ - ?	+ - ?
3.	D-im	+ - ?	+ - ?
4.	D-id	+ - ?	+ - ?
5.	D-ad	+ - ?	+ - ?
6.	Sm-og	+ - ?	+ - ?
7.	Sm-ile	+ - ?	+ - ?
8.	Sm-ell	+ - ?	+ - ?
9.	Sm-ack	+ - ?	+ - ?
10.	Sm-art	+ - ?	+ - ?

Check here if child indicates somehow that he is aware that the object is to put sounds together to form words _____

C. Message Man (6 messages)

Show child each message in turn and say: WHAT DOES THIS SAY?

Scoring is on a 5-point response as follows:

1. no response or irrelevant response
2. indicates that sign is to be read
3. makes an attempt to read sign
4. reads part correctly
5. reads message correctly

		Circle response				
1.	Do not touch!	1	2	3	4	5
2.	Step back!	1	2	3	4	5
3.	Jump!	1	2	3	4	5
4.	Leave now!	1	2	3	4	5
5.	Hurry back!	1	2	3	4	5
6.	Help me!	1	2	3	4	5

D. Recognition (10 items)

Show child cards with four words in a line and say: HERE ARE FOUR WORDS. POINT TO THE WORD CUBE.

Scoring: Circle + for correct, - for incorrect, and ? for no response or "don't know."

1.	cube	+	-	?	(cube, cub, club, chub)
2.	super	+	-	?	(supper, super, sugar, shuger)
3.	fit	+	-	?	(sat, hen, hin, fit)
4.	coat	+	-	?	(coyt, coit, coat, coot)
5.	snap	+	-	?	(snap, slap, swap, stap)
6.	jut	+	-	?	(nap, bed, win, jut)
7.	to	+	-	?	(of, to, if, is)
8.	danger	+	-	?	(warning, careful, crossing, danger)
9.	chop	+	-	?	(ship, slop, chop, clip)
10.	bow (bow ribbon)	+	-	?	(bea, bow, bie, bau)

E. Reading words

Say: WE'RE GOING TO READ SOME WORDS. Show the child the words one at a time on the cards. Say: READ THIS WORD.

Scoring: Circle + for correct, - for incorrect, and ? for no response or "don't know."

Child may mispronounce part of a word and still correctly pronounce the sound identified on the answer sheet. In every case listen for the cound or sounds identified.

1.	lot	l	+ - ?
		o	+ - ?
		t	+ - ?
2.	say	ay	+ - ?
3.	rake	r	+ - ?
		a	+ - ?
4.	chin	ch	+ - ?
5.	play	pl	+ - ?
6.	by	y	+ - ?
7.	stem	st	+ - ?
8.	help	lp	+ - ?
9.	toil	oi	+ - ?
10.	jet	j	+ - ?
		e	+ - ?
		t	+ - ?
11.	cub	c	+ - ?
		u	+ - ?
		b	+ - ?
12.	fit	f	+ - ?
		i	+ - ?
		t	+ - ?
13.	cube	u	+ - ?
14.	line	i	+ - ?
15.	chop	ch	+ - ?
16.	snow	ow	+ - ?
17.	cow	ow	+ - ?
18.	coat	oa	+ - ?
19.	later	a	+ - ?
20.	tramp	tr	+ - ?
		mp	+ - ?
21.	snap	sn	+ - ?
22.	danger	danger	+ - ?
23.	to	to	+ - ?
24.	no	no	+ - ?
25.	who	who	+ - ?
26.	was	was	+ - ?

F. Sentences (3)

Show child sentences on cards and say: READ THIS SENTENCE TO ME. The child must pronounce whole word correctly to be considered correct.

Scoring: Circle + for correct, - for incorrect, and ? for no response or "don't know."

1.	He went home.	he	+ - ?
		went	+ - ?

		home	+	-	?
		In order	+	-	?
2.	The little toy is mine.	the	+	-	?
		little	+	-	?
		toy	+	-	?
		is	+	-	?
		mine	+	-	?
		In order	+	-	?
3.	Bob has Mary's cat.	Bob	+	-	?
		has	+	-	?
		Mary's	+	-	?
		cat	+	-	?
		In order	+	-	?

Q: WHOSE CAT WAS IT?

G. Mixed order sentences (2)

Show child each card, point to each word and say: READ THE WORDS HERE. THE WORDS ARE: BIG, I, AM. (Jump cats for Item 2) THE WORDS DON'T MAKE SENSE THAT WAY. LET'S PUT THEM IN ORDER SO THAT THEY MAKE SENSE. CAN YOU PUT THE WORDS IN ORDER TO MAKE SENSE?

Scoring: order only, circle + for correct, - for incorrect, and ? for no response or "don't know."

1.	big I am	+	-	?
2.	jump cats	+	-	?

H. Nonsense words (12)

Say: NOW WE'RE GOING TO READ SOME MORE WORDS. THEY ARE WORDS YOU'VE NEVER HEARD BEFORE. THEY ARE MADE-UP WORDS. Point to each word and say: LOOK CAREFULLY AT EACH LETTER IN THE WORD, AND READ THE WORD TO ME.

Scoring: Circle + for correct, - for incorrect and ? for no response or "don't know." Child may mispronounce part of a word and still correctly pronounce the sound identified on the answer sheet. In every case listen for the sound or sounds identified.

1.	lin	l	+	-	?
		ĭ	+	-	?
2.	doy	oy	+	-	?
3.	m.ng	ing	+	-	?
4.	skep	sk	+	-	?
		ĕ	+	-	?
5.	moil	oi	+	-	?
6.	thern	th	+	-	?
		ern	+	-	?

7.	tader	$\bar{a}$	+	-	?
8.	bine	i	+	-	?
9.	dight	ight	+	-	?
10.	sher	sh	+	-	?
		ar	+	-	?
11.	nink	nk	+	-	?
12.	radder	$\breve{a}$	+	-	?

dog

im

p

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dd

d

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sm ile

sm ell

sm ack

sm art

Do not touch!

Step back!

Jump!

Leave now!

Hurry back!

Help me!

APPENDIX D

Fall Follow-up

Child's Name_____School_____

Date_____Tester's Name_____

A. Sounds: Nonsense words (4)

Say: WE'RE GOING TO READ SOME WORDS. THEY ARE WORDS YOU'VE NEVER HEARD BEFORE. THEY ARE MADE-UP WORDS. Point to each word and say: LOOK CAREFULLY AT EACH LETTER IN THE WORD, AND READ THE WORD TO ME.

Scoring: 1. No response or don't know
2. Makes an attempt to sound out word.
3. Correctly sounds out part of the word.
4. Reads word correctly.

1.	doil	1	2	3	4
2.	ling	1	2	3	4
3.	pight	1	2	3	4
4.	hink	1	2	3	4

B. Meaning (1)

Say: THIS SENTENCE IS NOT COMPLETE. PICK THE WORD THAT MAKES SENSE.

Scoring: Circle + for correct, - for incorrect and ? for no response or "don't know."

1. The cat is _____.
it me big go (Child selects) + - ?

2. The boy____the ball.
(Child produces a verb or verb phrase) + - ?

C. Left-to-right progression and line by line progression.

Ask the child to read sentence 2 above for left-to-right progression in reading.

+ - ?

1. Reading: left to right progression + - ?

Show child page with nine pictures on it and say: TELL ME THE NAMES OF THE THINGS IN THE PICTURES.

Scoring: Score only on using left-to-right and line-to-line progression. Circle + for correct, - for incorrect and ? for no response.

2. Left-to-right progression + - ?

3. Line-by-line progression + - ?

D. Writing: Left-to-right progression.

Give child a pencil and paper.

Say: WRITE THIS WORD DOG, D-O-G.

Scoring: Score only on left-to-right progression. Circle + for correct, - for incorrect and ? for no response or "don't know."

1. Left-to-right progression. + - ?

E. Written Directions

Ask child to stand up. Then show him cards with the words "sit" and "run" written on them and tell him to do what the cards say to do.

Scoring: Circle + for correct, - for incorrect and ? for no response or "don't know."

1. Sit! + - ?

2. Run! + - ?

F. Oral Direction

Say: DRAW A CIRCLE ON YOUR PAPER.

Scoring: Circle + for compliance, - for no compliance and ? for no response. Score only on compliance to directions.

1. Compliance + - ?

G. Is easily understood by others when speaking.

Scoring: Circle + for easily understood, - for not easily understood and ? for no response.

Say: WHAT'S YOUR NAME? + - ?
WHERE DO YOU LIVE? + - ?
DO YOU LIKE SCHOOL? + - ?
WHAT'S YOUR TEACHER'S NAME? + - ?

H. Repeats accurately a given sequence of sound or words.

Scoring: Circle + for correct, - for incorrect and ? for no response or "don't know."

Say: SAY THESE WORDS AFTER ME:

lin, doy, ming + - ?

I. Relationships

Scoring: Circle + for correct, - for incorrect and ? for no response or "don't know."

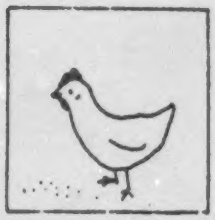
Say:	POINT YOUR FINGER UP.	+	-	?
	POINT YOUR FINGER DOWN.	+	-	?
	PUT YOUR HAND UNDER THE TABLE.	+	-	?
	PUT YOUR HAND OVER YOUR PAPER.	+	-	?

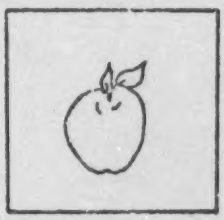
Show child a bottle and say:

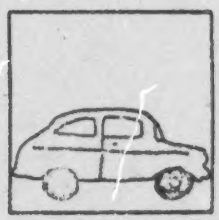
	SHOW ME THE TOP OF THIS.	+	-	?
	SHOW ME THE BOTTOM OF THIS.	+	-	?

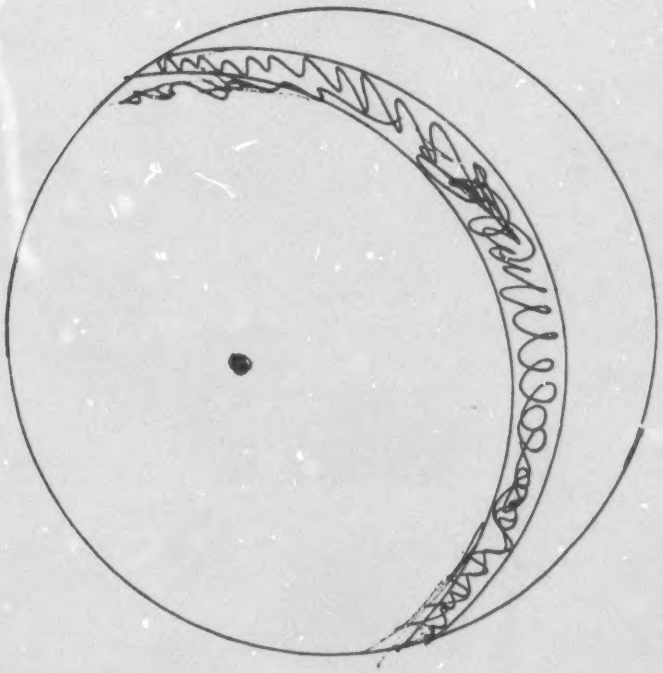
Show child picture of two balls and say:

	SHOW ME WHICH BALL IS BIG.	+	-	?
	SHOW ME WHICH BALL IS LITTLE.	+	-	?









Name of Child_____ School_____ Grade___ Teacher_____

How frequently does this child exhibit the following behaviors? (Please check the appropriate box.)

	1 Never	2 Less Than 50% of the Time	3 About 50% of the Time	4 More Than 50% of the Time	5 Always	Don't Know or no Opportunity to Observe
1. Sounds out written words he does not know by sight.						
2. Knows the meaning of written words which are common for his grade-level.						
3. Uses line-to-line progression when looking at picture books or reading.						
4. Uses left-to-right progression when looking at picture books or reading.						
5. Uses left-to-right progression in writing tasks.						
6. Knows meaning of simple written directions.						
7. Knows the meaning of simple oral directions.						
8. Is easily understood by others when speaking.						

	1 Never	2 Less Than 50% of the Time	3 About 50% of the Time	4 More Than 50% of the Time	5 Always	Don't Know or no Opportunity to Observe
9. Repeats accurately a given sequence of sounds or words.						
10. Understands the relationship between words such as up and down, top and bottom, big and little.						
11. Reads the labels on objects in the room.						
12. Associates written symbols with the spoken language.						
13. Asks the meanings of words or signs.						
14. Interested in the shapes of letters or words.						
15. Pays attention when the teacher talks.						
16. Eager to attend school						
17. Chooses picture or reading books for free time activity.						

18. What would you predict this child's reading ability will be two years from now?

_____1. Above grade level.

_____2. At grade level.

_____3. Below grade level.

19. What would you predict this child's general academic performance will be two years from now?

_____1. Above grade level.

_____2. At grade level.

_____3. Below grade level.

20. What is your estimate of this child's reading level at the present date?

_____1. Reading readiness.

_____2. Pre-primer.

_____3. Primer

_____4. First reader.

_____5. Above first reader.

Teacher Comments:_____

_____

_____

THANK YOU!

APPENDIX E

Observation Instruments

DIRECTIONS FOR VIEWING ASSISTANTS

EXTREMELY IMPORTANT

Never allow the children assigned to view the other educational television show watch The Electric Company or children assigned to view The Electric Company watch the other educational television show.

Children assigned to The Electric Company and the other educational television show will be divided into 5 groups each. You will observe the one group each day listed on the assignment sheet. If a child to be observed is absent, observe him on a day that week when he is present. Each child's behaviors are to be recorded once a week on a separate sheet for a total of 8 weeks (8 recording sheets).

BEFORE STARTING PROGRAM

V.A. #1 1. Have chairs for children available in viewing area.
V.A. #1 2. Record attendance record for The Electric Company.
V.A. #1 3. Ask The Electric Company children if they need to go to the bathroom and wait for all to return.
V.A. #1 4. Take The Electric Company children to viewing area --- they can sit on either floor or chairs --- but somewhat separated from each other.
V.A. #1 5. MAKE SURE EACH CHILD CAN SEE THE TELEVISION.
V.A. #1 6. Make sure all children are The Electric Company viewers and that NO viewers of the other educational television program are present.
V.A. #1 7. Fill out top portion of observation sheets for each child in that day's observation group.
V.A. #1 8. Insert video cassette and start The Electric Company program. Adjust sound so all children can hear the program.

WHILE VIEWING

V.A. #1 1. Maintain order and do not allow children to run around.
V.A. #1 2. If a child is restless or non-attentive say quietly, "Let's watch the program."
V.A. #1 3. If a child is disturbing the others and won't settle down,

remove him from viewing. (Do this only if absolutely necessary for others.) Record this.

V.A. #1 4. If a child asks a question about the program while viewing, respond briefly and quietly so it doesn't interfere with other children.

V.A. #2 5. Observe child #1 and record this behavior and program segment.

V.A. #2 6. Observe child #2 and record this behavior and program segment.

V.A. #2 7. Continue observing each child of observation group and record.

V.A. #2 8. Start with child #1 again when completed all children.

AFTER VIEWING

V.A. #1 and 2 1. Reverse jobs and follow above instructions for the children viewing the other educational television program.

Name of Center: _____
Program Viewed: _____
Day: M T W TH F
Time of Viewing: _____

Name of Child: _____
Program Number: _____
Date: _____
Child's Observation Number: _____

Program Segments

Child's Behaviors								
1. *Attention (1,2,3)								
READS								
2. Sounds								
3. Words								
4. Phrases or Sentences								
IMITATES PROGRAM								
5. Sounds								
6. Words								
7. Phrases or Sentences								
8. Actions								
TALKS								
9. Answers Program Questions								
10. Positive Comments About Program or Character								
11. Negative Comments About Program or Character								
12. Offers Information to TV								
13. Talking Not Related to Program								
14. Laughs at Program								
15. Seeks Viewing Assts. Attention								
16. *Moves Around (1,2,3)								

Unusual or Other Behaviors: _____

*1= little or none 2= some 3= great amount

Name of Center: _____

Program Viewed: _____ Program Number: _____

Day: M T W TH F Date: _____

Time of Viewing: _____ Child's Observation Number: _____

Program Segments

Behaviors							
1A. *Attention (1,2,3)							
1B. #Watching program							
READS							
2. Sounds							
3. Words							
4. Phrases or Sentences							
IMITATES PROGRAM							
5. Sounds							
6. Words							
7. Phrases or Sentences							
8. Actions							
TALKS							
9. Answers Program Questions							
10. Positive Comments About Program or Character							
11. Negative Comments About Program or Character							
12. Offers Information to TV							
13. Talking Not Related to Program							
14. Laughs at Program							
15. Seeks Viewing Assts. Attention							
16. *Moves Around (1,2,3)							
17. Noise Level (1,2,3)							

Unusual or Other Behaviors: _____

*1= little or none 2= some 3= great amount

GROUP OBSERVATION

Center: _____
Day: M T W TH F
Children viewing: _____
Children arrived late: _____
Children left early: _____

Observer: _____
Date: _____
The Electric Company
Program # _____
Viewing assistants present: _____

Physical Location of Subjects While Viewing (X= Subjects on chairs, O= Subjects on floor)

TV

Viewing Assistant's Actions: _____

Average of Children's Attention
Over Total Program: _____

Comments: _____

Physical Location and Description of Viewing Area: _____

_____

_____

Description of Center:

Daily Activities: _____

_____

Children for Which Licensed: _____

Physical Location: _____

_____

_____

_____

Physical Facilities and Materials: _____

_____

_____

Impression of Teachers: _____

_____

_____

Impression of Most Children: _____

_____

_____

Comments: _____

_____

_____

APPENDIX F

Parent Questionnaire

WESTERN ILLINOIS UNIVERSITY
MACOMB, ILLINOIS 61455

COLLEGE OF EDUCATION
EDUCATIONAL FOUNDATIONS

Dear Mother:

Western Illinois University is conducting a study of television viewing of day care center children. Your name has been selected because your child or children attend a day care center in the Quad-Cities area. We would greatly appreciate your completing the attached questionnaire as accurately as possible. The information you provide will be used for research purposes only and will be kept completely confidential.

If you have any questions about this study, please ask your child's day care director or contact Western Illinois University at the following address or phone. There is space provided at the end of the questionnaire for you to add any comments you wish to make.

We sincerely hope that you will be willing to participate in this important venture. We are, therefore, thanking you in advance for your cooperation.

Please put completed questionnaire into enclosed stamped envelope and drop into nearest mailbox Thank you.

Cordially,

Child's Name_____ _____Sex__M__F Birthdate ___/ ___/___/
Last First

Name of day care center your child attends_____

Name of school your child will be attending Fall 1975_____

Grade in school your child will be in Fall 1975_____

What was last grade in school you completed? Circle one.

8th grade.....1
9th, 10th, or 11th grade.....2
12th grade.....3
1 or 2 yrs. college.....4
3 or 4 yrs. college.....5
Other post high school training (Please specify)_____6

Are you employed outside the home? Circle one.

Over 35 hrs. per week.....1
10-35 hrs. per week.....2
Less than 10 hrs. per week.....3
Not employed.....4

What was the last grade in school the male head of household completed? Circle one.

8th grade.....1
9th, 10th, or 11th grade.....2
12th grade.....3
1 or 2 yrs. college.....4
3 or 4 yrs. college.....5
Other post high school training (Please specify)_____6

Is the male head of household employed full or part time? Circle one.

Over 35 hrs. per week.....1
10-35 hrs. per week.....2
Less than 10 hrs. per week.....3
Not employed.....4
Does not apply.....5

What kind of TV programs does your child like to watch? (Circle one number for each kind of program listed.)

	YES	NO
Sports Events	1	2
News	1	2
Comedy Shows	1	2
Educational Shows	1	2
Soap Operas (serials)	1	2
Movies	1	2
Cartoons	1	2
Musical and/or variety shows	1	2
Other: (Specify)_____	1	2

Approximately how many times a week does your child watch the following TV programs?

Cartoons	0	1	2	3	4	5	or more
Captain Kangaroo	0	1	2	3	4	5	or more
Sesame Street	0	1	2	3	4	5	or more
The New Zoo Review	0	1	2	3	4	5	or more
Bozo's Circus	0	1	2	3	4	5	or more
The Electric Company	0	1	2	3	4	5	or more
Hudson Bros. Show	0	1	2	3	4	5	or more
Mr. Rogers	0	1	2	3	4	5	or more
Globetrotters	0	1	2	3	4	5	or more
Kukla, Fran and Ollie	0	1	2	3	4	5	or more
The Blue Marble	0	1	2	3	4	5	or more
Romper Room	0	1	2	3	4	5	or more
Ray Raynor	0	1	2	3	4	5	or more
Garfield Goose	0	1	2	3	4	5	or more

Approximately how many years has your child been watching the following TV programs?

Cartoons	0	1	2	3	4	5	or more
Captain Kangaroo	0	1	2	3	4	5	or more
Sesame Street	0	1	2	3	4	5	or more
The New Zoo Review	0	1	2	3	4	5	or more
Bozo's Circus	0	1	2	3	4	5	or more
The Electric Company	0	1	2	3	4	5	or more
Hudson Bros. Show	0	1	2	3	4	5	or more
Mr. Rogers	0	1	2	3	4	5	or more
Globetrotters	0	1	2	3	4	5	or more
Kukla, Fran and Ollie	0	1	2	3	4	5	or more
The Blue Marble	0	1	2	3	4	5	or more
Romper Room	0	1	2	3	4	5	or more
Ray Raynor	0	1	2	3	4	5	or more
Garfield Goose	0	1	2	3	4	5	or more

Does your child have his own: (Circle one for each item listed.)

	YES	NO
Art things like crayons or paints	1	2
Toys like puzzles, blocks, or games	1	2
Books	1	2
Records or tapes	1	2

Which of the following things do you have? (Circle 1 for yes and 2 for no for each article.)

	YES	NO
Automobile	1	2
Black and White TV set	1	2
Clothes Dryer	1	2
Clothes Washer	1	2
Color TV set	1	2
Dictionary	1	2
Dishwasher	1	2
Encyclopedia	1	2
Hi-Fi or phonograph	1	2
Musical instrument	1	2
Oven	1	2
Refrigerator	1	2
Stove	1	2
Tape recorder	1	2
Telephone	1	2
Still or movie camera	1	2

Comments_____

_____

_____

_____

_____

Please put the completed questionnaire into enclosed stamped envelope and drop into nearest mailbox. Thank you for your cooperation!

WESTERN ILLINOIS UNIVERSITY

MACOMB, ILLINOIS 61455

COLLEGE OF EDUCATION

EDUCATIONAL FOUNDATIONS

September 15, 1975

Dear Mother:

Western Illinois University is conducting a study of television viewing of day care center children. Your name was selected because your child or children attended a day care center in the Quad-Cities ares. We wish to thank the many parents who have participated by completing and mailing the questionnaire to us.

If you did not receive or mislaid the questionnaire which was sent home with your child, another one is enclosed. We would greatly appreciate your completing the questionnaire which will take only a few minutes of your time. The information you provide will be used for research purposes only and will be kept completely confidential.

If you have any questions about this study, please ask your child's day care director or contact Western Illinois University at the following address or phone. There is space provided at the end of the questionnaire for you to add any comments you wish to make.

We sincerely hope that you will be willing to participate in this important venture. We are, therefore, thanking you in advance for your cooperation.

Please put the completed questionnaire into the enclosed stamped envelope and drop into the nearest mailbox. Thank you.

If you have already mailed your completed questionnaire, thank you again.

Cordially,

APPENDIX G

Categories for Coding and Examples of Responses from Interviews

CATEGORIES FOR CODING INTERVIEWS

Question 1: What is the TV program The Electric Company about?
Question 2: What can another child learn from The Electric Company?

Reading Related

Sounds, sound out, pronunciation
Words
Reading
Meaning
Letters, alphabet, ABC's, specific letters
Spelling
Shape of words
Sentence, paragraph
Punctuation marks
English, talk better
Writing
Teaching, learning, thinking (no referent to reading)
Numbers, counting
Sesame Street related (Big Bird, Cookie Monster)

The Electric Company Program Characters

Spiderman
Road Runner
Messageman
Letter Man
Other characters, specific reference to

TV Techniques, The Electric Company or the Other Television Program

Animation, cartoons
Music/dance
Humor/funny
Stories/pictures/reference to story incidents
Stuff/things/play
People: Men, women, boys, girls
Non-program related verbalization
"I don't watch TEC, I watch" the other television program
I don't know/no
ND--Non-distinguishable verbalization
Reference to TEC
Reference to specific TEC incident or story
Activity or emotions of people

Total Number of Phrases

SELECTED EXAMPLES OF RESPONSES OF CHILDREN DURING INTERVIEWS

Question 1: What is the TV show The Electric Company about?

Child A: Well, they show, uh, words, and you have to try and guess what they are. And in about the middle of it they have a word and you have to read this word before it blows up. And they have people on there. And they say words, things like that and there's, uhm, like there's how many things on there and there's people that think up like stories. Most of the time at the end they have a very short story and they have like Cinderella and stuff like that.

Child B: I don't know.

Child C: Sesame Street

Child D: About Spiderman.

Child E: Cartoons. Spiderman. The story about kings. And the very short book.

Child F: 'Bout watchin' TV.

Child G: It----'Lectric Company have cartoons, and they have cartoon mans and they answer read it.

Child H: 'Bout make believe.

Child I: It's about words. And about silent stuff, like the silent "E".

Child J: Well, it's about learning to read. I was watching it one time....it's about....it's like a school like thing.

Child K: It's about learning how to spell words...how to sound them out....and that's all.

Child L: About the Electric Co.? Oh, it shows about the Road Runner and Messageman and how to put words together. Silhouette and, oh, I know. It's something, well, say, when the world will blow up in 15 seconds. That's it, I can't say any more.

SELECTED EXAMPLES OF RESPONSES OF CHILDREN DURING INTERVIEWS

Question 2: What could another child learn from The Electric Company?

Child A: Like little children, they could learn the words on there. And they could learn like what some other things on there they show. They show, like they have a word and then they show a picture of it sometimes, and they can find out what it is.

Child B: They could learn, um, the sound of the letters and all that. And they can see the words.

Child C: Learn numbers and words.

Child D: Like fun and somethin' like that, and you use it when you come back from the school.

Child E: They could learn about it....about spelling. A boy they know.

Child F: I learn things from The Electric Company 'cause I watch it everytime I come home. And I watch Sesame Street. It's even more fund than the 'Lectric Company.

Child G: Learn how to spell words, read, and----learn how to talk.

Child H: You learn words----

Child I: He's learn how to spell....and sound out words.

Child J: Learn about work.

Child K: He could learn how to sound out words and he could learn to read....he could learn lots of things from The Electric Company.

Child L: Learn words and how to dance and think. They could pretend like they was their friends and play like something they play on The Electric Company. That's what they can do.

APPENDIX H

Pre- and Posttest Scores
on Individual Items by Age Levels

4 YEAR OLDS--METROPOLITAN ALPHABET TEST
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
s	60	29	48	60	28	47	46	31	67	46	32	70
y	60	20	33	60	22	37	47	27	57	45	26	58
c	60	24	40	60	20	33	46	22	48	43	23	53
k	60	23	38	60	22	37	45	27	60	44	24	55
e	60	21	35	60	16	27	47	29	62	45	24	56
b	60	17	28	60	14	23	45	20	44	42	15	36
v	60	32	53	60	24	40	43	24	56	45	27	60
t	60	23	38	60	14	23	46	24	52	43	26	60
n	60	17	28	60	10	17	46	12	26	45	12	27
r	60	16	27	60	16	27	45	19	42	43	23	53
u	60	20	33	60	20	33	46	17	37	43	24	56
g	60	15	25	60	15	25	44	18	41	45	20	44
f	60	19	32	60	21	35	46	25	54	44	22	50
j	60	15	25	60	13	22	46	18	39	43	21	49
l	60	13	22	60	12	20	46	15	33	44	17	39
q	60	11	18	60	12	20	45	18	40	41	17	41

4 YEAR OLDS--INDIVIDUAL ALPHABET LETTER NAMES
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
a	59	11	19	54	7	13	48	6	13	48	6	13
d	58	5	9	55	3	5	48	4	8	48	6	13
h	58	9	16	53	6	11	48	8	17	48	14	29
i	57	12	21	51	11	22	47	15	32	48	15	31
m	57	12	21	52	12	23	48	12	35	48	16	33
o	58	28	48	51	27	53	48	29	60	48	28	58
p	57	16	28	51	15	29	48	16	33	47	14	30
w	57	16	28	50	18	36	48	18	38	47	15	32
x	57	25	44	51	20	39	48	25	52	47	20	43
z	57	13	23	49	13	27	47	13	28	47	14	30
j							47	13	28	47	13	28
t							47	12	26	47	12	26
b							46	9	20	46	5	11

4 YEAR OLDS--INDIVIDUAL ALPHABET LETTER SOUNDS
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
a	5	2	40	4	1	25	42	4	10	40	2	5
d	5	0	0	4	0	0	42	0	0	44	0	0
h	5	0	0	4	1	25	43	1	2	43	2	5
i	5	0	0	4	1	25	42	4	10	42	2	5
m	5	1	20	4	1	25	43	2	5	44	8	18
o	5	2	40	4	1	25	46	7	15	44	10	23
p	5	2	40	4	0	0	43	3	7	43	5	12
w	5	0	0	4	2	50	43	2	5	42	1	2
x	5	2	40	4	1	25	44	4	9	43	6	14
z	5	1	20	4	3	75	42	2	5	43	5	12
j							44	4	9	42	1	2
t							42	5	12	43	3	7
b							42	3	7	42	2	5

4 YEAR OLDS--SILHOUETTES: VISUAL
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
D-og							41	0	0	44	1	2
D-ig							41	0	0	44	0	0
D-im							40	0	0	43	0	0
D-id							40	0	0	44	0	0
D-ad							40	0	0	43	0	0
Sm-og							40	0	0	43	0	0
Sm-ile							40	0	0	43	0	0
Sm-ell							40	0	0	43	0	0
Sm-ack							40	0	0	43	0	0
Sm-art							40	0	0	43	0	0

Note: Items D-og through D-ad did not appear on the TEC programs viewed by the children. Items Sm-og through Sm-art did appear.

4 YEAR OLDS--SILHOUETTES: AUDITORY
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
D-og							46	8	17	48	6	13
D-ig							46	5	11	47	6	13
D-im							46	3	7	47	2	4
D-id							46	3	7	47	1	2
D-ad							46	5	11	46	1	2
Sm-og							46	4	9	46	4	9
Sm-ile							46	7	15	46	8	17
Sm-ell							46	4	9	46	5	11
Sm-ack							46	7	15	47	8	17
Sm-art							46	9	20	47	11	23

Note: Items D-og through D-ad did not appear on the TEC programs viewed by the children. Items Sm-og through Sm-art did appear.

4 YEAR OLDS--MESSAGEMAN MESSAGES
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
Do not touch!							46	1	2	46	0	0
Step back!							46	1	2	47	0	0
Jump!							46	3	7	47	1	2
Leave now!							46	1	2	47	0	0
Hurry back!							46	1	2	47	0	0
Help me!							46	1	2	47	0	0

Note: The first three items did appear on the TEC programs viewed by the children. The last three items did not appear.

4 YEAR OLDS--WORD RECOGNITION
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
cube							45	21	47	47	13	28
super							45	8	18	47	10	21
fit							46	13	28	47	15	33
coat							45	11	24	45	11	23
snap							45	19	42	47	8	17
jut							46	16	35	47	13	28
to							45	9	20	47	7	15
danger							45	6	13	47	12	26
chop							45	9	20	47	9	19
bow (bow ribbon)							45	12	27	47	11	23

4 YEAR OLDS--READING WORDS
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
l	28	1	4	29	0	0	45	0	0	43	0	0
o	28	4	14	28	3	11	45	0	0	43	1	2
t	27	2	7	28	1	4	45	0	0	43	0	0
ay	26	1	4	29	0	0	46	0	0	43	0	0
r	28	1	4	29	1	3	45	0	0	43	0	0
ā	26	1	4	29	0	0	45	0	0	43	0	0
ch	27	0	0	28	0	0	45	0	0	43	0	0
pl	26	0	0	28	1	4	46	1	2	43	0	0
y	23	0	0	20	0	0	45	1	2	43	0	0
st	22	0	0	20	0	0	46	0	0	43	0	0
lp	22	0	0	20	0	0	45	1	2	43	0	0
oi	22	0	0	20	0	0	45	0	0	43	0	0
j							46	2	4	43	0	0
e							46	1	2	43	0	0
t							46	1	2	43	0	0
c							45	0	0	43	0	0
u							45	0	0	43	0	0
b							45	0	0	43	0	0
f							45	0	0	42	0	0
i							45	0	0	42	0	0
t							45	0	0	42	0	0
u							45	0	0	42	0	0

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
i							46	1	2	42	0	0
ch							45	0	0	42	0	0
ow							45	0	0	42	0	0
ow							46	0	0	42	0	0
oa							45	0	0	42	0	0
a							45	0	0	42	0	0
tr							45	0	0	42	0	0
mp							45	0	0	42	0	0
sn							45	0	0	42	0	0
danger							45	0	0	42	0	0
to							46	1	2	42	0	0
no							46	2	4	42	2	5
who							45	0	0	42	0	0
was							45	0	0	42	0	0

4 YEAR OLDS--SENTENCES
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
He	0	0	0	1	1	100	45	16	36	43	1	2
went	0	0	0	1	0	0	45	0	0	43	0	0
home	0	0	0	1	0	0	45	0	0	43	0	0
In order	0	0	0	0	0	0	39	0	0	40	0	0
The	0	0	0	1	1	100	45	0	0	43	1	2
little	0	0	0	1	0	0	45	0	0	43	0	0
toy	0	0	0	1	0	0	45	0	0	43	0	0
is	0	0	0	1	0	0	45	1	2	43	0	0
mine	0	0	0	1	0	0	45	0	0	43	0	0
In order	0	0	0	0	0	0	39	0	0	39	0	0
Bob							45	1	2	43	0	0
has							45	0	0	43	0	0
Mary's							45	0	0	43	0	0
cat							45	0	0	43	1	2
In order							40	0	0	40		0
WHOSE CAT WAS IT?							39	0	0	43	1	3

4 YEAR OLDS--MIXED ORDER SENTENCES
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
big I am	0	0	0	1	1	100	46	2	4	43	1	2
boy tall is the	0	0	0	1	0	0						
sees red he house a	0	0	0	1	0	0						
walks town the she to	0	0	0	1	0	0						
jump cats							45	1	2	43	2	5

4 YEAR OLDS--NONSENSE WORDS
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
l	0	0	0	0	0	0	40	1	3	42	0	0
i	0	0	0	0	0	0	40	0	0	42	0	0
oy	0	0	0	0	0	0	40	1	3	42	0	0
ing	0	0	0	0	0	0	40	1	3	42	0	0
sk	0	0	0	0	0	0	40	0	0	41	0	0
ĕ	0	0	0	0	0	0	40	0	0	41	0	0
oi	0	0	0	0	0	0	40	0	0	41	0	0
th	0	0	0	0	0	0	40	0	0	41	1	2
ern	0	0	0	0	0	0	40	0	0	41	0	0
ā	0	0	0	0	0	0	40	0	0	41	0	0
ī	0	0	0	0	0	0	40	0	0	41	0	0
ight	0	0	0	0	0	0	40	0	0	41	0	0
sh	0	0	0	0	0	0	40	0	0	41	0	0
ar	0	0	0	0	0	0	40	0	0	41	0	0
nk	0	0	0	0	0	0	40	0	0	41	1	2
ă	0	0	0	0	0	0	40	0	0	41	0	0

5 YEAR OLDS--METROPOLITAN ALPHABET TEST
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
s	58	37	64	66	43	67	43	36	84	47	38	81
y	58	37	64	66	40	63	43	31	72	47	32	68
c	58	36	62	66	35	55	40	23	58	47	32	68
k	58	36	62	66	34	53	42	29	69	46	32	70
e	58	30	52	66	36	55	42	26	62	46	26	57
b	58	25	43	66	26	41	43	24	56	47	28	60
v	58	39	67	66	34	53	43	30	70	44	33	75
t	58	22	38	66	30	47	41	21	51	46	27	59
n	58	25	43	66	23	36	41	22	54	44	18	41
r	58	32	55	66	23	36	43	26	60	45	22	49
u	58	33	57	66	28	44	42	30	71	44	29	66
g	58	22	38	66	28	44	40	19	48	45	16	36
f	58	28	48	66	29	45	41	22	54	46	24	52
j	58	28	48	66	28	44	42	22	52	46	24	52
l	58	23	40	66	21	33	42	21	50	46	17	37
q	58	25	43	66	22	34	42	19	45	46	22	48

5 YEAR OLDS--INDIVIDUAL ALPHABET LETTER NAMES
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
a	55	14	25	62	12	19	42	12	29	45	10	22
d	56	7	13	102	4	6	41	9	22	45	0	0
h	55	14	25	62	16	26	42	13	31	45	11	24
i	55	26	47	61	25	41	42	22	52	47	25	53
m	54	19	35	61	24	39	42	16	38	46	21	46
o	54	36	67	61	37	61	42	34	81	46	33	72
p	54	28	52	61	22	36	41	21	51	46	14	30
w	54	20	37	61	25	41	42	25	60	47	27	57
x	54	35	65	61	38	62	42	34	81	46	33	72
z	54	25	46	61	30	49	42	24	57	46	23	50
j							41	23	56	47	20	43
'							41	16	39	46	14	30
b							40	12	30	47	12	26

5 YEAR OLDS--INDIVIDUAL ALPHABET LETTER SOUNDS
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
a	5	1	20	8	3	38	35	6	17	38	6	16
d	5	0	0	8	0	0	36	3	8	38	1	3
h	5	0	0	8	2	25	36	5	14	37	2	5
i	5	1	20	8	4	50	36	12	33	42	7	17
m	5	3	60	8	4	50	37	8	22	39	9	23
o	5	3	60	9	7	78	40	16	40	42	9	21
p	5	2	40	8	4	50	36	10	28	37	6	16
n	5	0	0	8	1	13	36	4	11	41	2	5
x	6	0	0	9	1	11	38	8	21	42	7	17
z	5	2	40	10	6	60	35	11	31	38	9	24
j							35	11	31	40	6	15
t							36	9	25	40	7	18
b							34	8	24	37	4	11

5 YEAR OLDS--SILHOUETTE: VISUAL
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
D-og							40	1	3	45	1	2
D-ig							40	1	3	45	0	0
D-im							41	0	0	45	0	0
D-id							41	0	0	44	0	0
D-ad							40	2	5	43	0	0
Sm-og							42	0	0	46	0	0
Sm-ile							41	1	2	46	0	0
Sm-ell							41	2	5	46	0	0
Sm-ack							41	2	5	46	0	0
Sm-art							41	2	5	46	0	0

Note: Items D-og through D-ad did not appear on the TEC programs viewed by the children. Items Sm-og through Sm-art did appear.

5 YEAR OLDS--SILHOUETTE: AUDITORY
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
D-og							40	18	45	45	11	24
D-ig							40	14	35	45	7	16
D-im							41	9	22	45	4	9
D-id							41	10	24	44	3	7
D-ad							40	7	18	43	2	5
Sm-og							42	15	36	46	8	17
Sm-ile							41	15	37	46	10	22
Sm-ell							41	12	29	46	6	13
Sm-ack							41	9	22	46	6	13
Sm-art							41	8	20	46	5	11

Note: Items D-og through D-ad did not appear on the TEC programs viewed by the children. Items Sm-og through Sm-art did appear.

5 YEAR OLDS--MESSAGEMAN MESSAGES
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
Do not touch!							42	1	2	47	1	2
Step back!							42	1	2	47	1	2
Jump!							42	2	5	47	2	4
Leave now!							42	1	2	47	1	2
Hurry back!							42	1	2	47	1	2
Help me!							42	1	2	47	1	2

Note: The first three items did appear on the TEC programs viewed by the children. The last three items did not appear.

5 YEAR OLDS--WORD RECOGNITION
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
cube							42	20	48	47	15	32
super							42	9	21	47	14	30
fit							41	14	34	47	19	40
coat							42	11	26	47	13	28
snap							42	13	31	47	12	26
jut							42	19	45	47	19	40
to							42	6	14	47	7	15
danger							42	11	26	47	10	21
chop							42	8	19	46	12	26
bow (bow ribbon)							41	8	20	45	14	31

5 YEAR OLDS--READING WORDS
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
l	29	2	7	33	3	9	40	3	8	46	1	2
o	26	7	27	31	7	23	40	2	5	46	1	2
t	25	5	20	31	9	29	40	6	15	46	2	4
ay	28	2	7	32	1	3	40	3	8	46	1	2
r	28	4	14	32	5	16	40	3	8	46	1	2
ā	25	2	8	28	2	7	40	1	3	45	2	4
ch	27	2	7	31	2	6	40	1	4	45	1	2
pl	27	2	7	31	2	6	40	2	5	45	1	2
y	24	3	13	28	3	11	40	1	3	45	2	4
st	24	2	8	28	4	14	40	3	8	45	1	2
lp	24	2	8	28	2	7	40	1	3	45	2	4
oi	22	13	59	27	1	4	40	1	3	45	1	2
j							40	5	13	45	2	4
e							40	4	10	45	1	2
t							40	5	13	45	2	4
c							40	4	10	45	2	4
u							40	1	3	45	2	4
b							40	4	10	45	3	7
f							39	4	10	45	3	7
i							39	3	8	45	2	4
t							39	4	10	45	3	7
u							39	2	5	45	0	0

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
i							39	2	5	45	1	2
ch							39	1	3	45	2	4
ow							39	1	3	45	1	2
ow							38	2	5	45	2	4
oa							39	1	3	45	0	0
a							39	0	0	45	1	2
tr							39	2	5	45	1	2
mp							39	1	3	45	1	2
sn							39	2	5	45	1	2
danger							39	2	5	45	1	2
to							39	3	8	45	2	4
no							39	5	13	45	4	9
who							39	0	0	45	1	2
was							39	2	5	45	1	2

5 YEAR OLDS--SENTENCES
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
He	2	2	100	1	1	100	39	1	3	46	1	2
went	2	2	100	1	1	100	39	1	3	46	1	2
home	2	2	100	1	1	100	39	1	3	46	1	2
In order.	1	1	100	1	1	100	35	1	3	40	1	3
The	2	2	100	1	1	100	39	1	3	46	1	2
little	2	2	100	1	1	100	39	1	3	46	1	2
toy	2	2	100	1	1	100	39	1	3	46	1	2
is	2	2	100	1	1	100	39	1	3	46	1	2
mine	2	1	50	1	1	100	39	0	0	45	1	2
In order.	1	1	100	1	1	100	34	0	0	39	1	3
Bob							39	2	5	46	1	2
has							39	1	3	46	1	2
Mary's							39	1	3	46	1	2
cat							39	1	3	46	2	4
In order.							34	1	3	40	1	3
WHOSE CAT WAS IT?							31	1	3	36	1	3

5 YEAR OLDS--MIXED ORDER SENTENCES
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
big I am	2	1	50	1	1	100	39	5	13	47	2	4
boy tall is the	2	0	0	1	0	0						
sees red he house a	2	0	0	1	0	0						
walks town the she to	2	0	0	1	0	0						
jump cats							39	6	15	47	3	6

5 YEAR OLDS--NONSENSE WORDS
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
l	2	2	100	1	1	100	38	3	8	44	1	2
i	2	1	50	1	0	0	38	1	3	44	0	0
oy	2	2	100	1	0	0	38	1	3	44	0	0
ing	2	2	100	1	0	0	38	1	3	44	1	2
sk	2	1	50	1	0	0	38	3	8	44	1	2
e	2	1	50	1	1	100	38	2	5	44	0	0
oi	2	2	100	1	0	0	38	1	3	44	0	0
th	2	2	100	1	0	0	38	1	3	44	0	0
ern	2	2	100	1	1	100	38	1	3	44	0	0
a	2	0	0	1	0	0	38	1	3	44	1	2
i	2	1	50	1	0	0	38	2	5	44	1	2
ight	2	1	50	1	1	100	38	1	3	44	1	2
sh	2	2	100	1	0	0	38	3	8	44	1	2
ar	2	2	100	1	0	0	38	1	3	44	0	0
nk	2	2	100	1	0	0	38	3	8	44	1	2
a	2	0	0	1	0	0	38	3	8	44	0	0

6 YEAR OLDS--METROPOLITAN ALPHABET TEST
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
s	21	20	95	16	14	88	14	14	100	11	9	82
y	21	21	100	16	15	94	14	13	93	11	10	91
c	21	20	95	16	14	88	14	14	100	11	10	91
k	21	20	95	16	14	88	14	14	100	11	10	91
e	21	19	90	16	15	94	14	13	93	11	11	100
b	21	20	95	16	10	63	14	12	86	11	10	91
v	21	20	95	16	15	94	14	13	93	11	11	100
t	21	19	90	16	13	81	14	12	86	11	10	91
n	21	18	86	16	14	88	14	11	79	11	9	82
r	21	21	100	16	13	81	13	13	100	11	9	82
u	21	17	81	16	11	69	13	10	77	11	8	73
g	21	18	86	16	11	69	13	11	85	11	8	73
f	21	18	86	16	14	88	13	13	100	11	9	82
j	21	19	90	16	14	88	13	12	92	11	9	82
l	21	16	76	16	13	81	13	12	92	11	9	82
q	21	17	81	16	9	56	13	9	69	11	7	64

6 YEAR OLDS--INDIVIDUAL ALPHABET LETTER NAMES
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
a	21	17	81	15	11	69	13	10	77	10	7	70
d	21	3	14	16	4	25	13	3	23	11	2	18
h	21	14	67	16	9	56	13	8	62	11	7	64
i	21	20		16	11	69	13	12	92	11	8	73
m	21	13	62	16	11	69	13	8	62	11	8	73
o	21	20	95	16	16	100	13	13	100	11	10	91
p	21	19	90	16	12	75	13	11	85	11	7	64
w	21	19	90	16	13	81	13	11	85	11	8	73
x	21	19	90	16	11	69	13	13	100	11	8	73
z	21	18	86	16	12	75	13	12	92	11	8	73
j							13	12	92	11	7	64
t							13	11	85	11	8	73
b							13	8	62	11	4	36

6 YEAR OLDS--INDIVIDUAL ALPHABET LETTER SOUNDS
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
a	4	3	75	2	2	100	11	8	73	11	6	55
d	4	0	0	2	1	50	9	3	33	11	4	36
h	4	3	75	2	2	100	10	6	60	11	6	55
i	4	4	100	2	2	100	13	6	46	11	2	18
m	4	1	25	2	2	100	10	7	70	11	6	64
o	4	4	100	2	2	100	13	9	69	11	7	64
p	4	4	100	2	1	50	12	7	58	11	4	36
w	4	3	75	2	1	50	13	7	54	11	4	36
x	4	4	100	2	1	50	13	4	31	11	1	9
z	4	4	100	2	1	50	12	9	75	11	4	36
j							12	8	67	11	3	27
t							12	8	67	11	5	45
b							11	6	55	11	4	36

6 YEAR OLDS--SILHOUETTE: VISUAL
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
D-og							11	2	18	11	1	9
D-ig							13	0	0	11	1	9
D-im							12	1	8	11	1	9
D-id							13	0	0	11	2	18
D-ad							13	0	0	11	1	9
Sm-og							13	0	0	11	0	0
Sm-ile							13	0	0	11	0	0
Sm-ell							13	0	0	11	1	9
Sm-ack							12	1	8	11	1	9
Sm-art							12	1	8	11	1	9

Note: Items D-og through D-ad did not appear on the TEC programs viewed by the children. Items Sm-og through Sm-art did appear.

6 YEAR OLDS--SILHOUETTE: AUDITORY
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
D-og							11	5	45	11	6	55
D-ig							13	6	46	11	6	55
D-im							12	5	42	11	5	45
D-id							13	7	54	11	6	55
D-ad							13	7	54	11	5	45
Sm-og							13	8	62	11	3	27
Sm-ile							13	7	54	11	6	55
Sm-ell							13	6	46	11	5	45
Sm-ack							12	5	42	11	4	36
Sm-art							12	5	42	11	5	45

Note: Items D-og through D-ad did not appear on the TEC programs viewed by the children. Items Sm-og through Sm-art did appear.

6 YEAR OLDS--MESSAGEMAN MESSAGES
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
Do not touch!							13	0	0	11	2	18
Step back!							13	0	0	11	2	18
Jump!							13	1	8	11	2	18
Leave now!							13	0	0	11	1	9
Hurry back!							13	0	0	11	0	0
Help me!							13	3	23	11	2	18

Note: The first three items did appear on the TEC programs viewed by the children. The last three items did not appear.

6 YEAR OLDS--WORD RECOGNITION
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
cube							13	5	38	11	3	27
super							13	6	46	11	5	45
fit							13	9	69	10	7	70
coat							13	3	23	11	6	55
snap							13	5	38	11	2	18
jut							13	11	85	11	7	64
to							13	8	62	11	7	64
danger							13	7	54	11	7	64
chop							13	2	15	11	4	36
bow (bow ribbon)							13	7	54	11	6	55

6 YEAR OLDS--READING WORDS
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
l	19	10	53	14	4	29	13	4	31	11	3	27
o	17	7	41	13	4	31	13	0	0	11	1	9
t	18	9	50	13	3	23	13	3	23	11	4	36
ay	19	2	11	14	4	29	13	3	23	11	2	18
r	18	4	22	13	3	23	12	4	33	11	2	18
a	19	2	11	13	3	23	13	1	8	11	1	9
ch	19	4	21	13	3	23	13	2	15	11	1	9
pl	18	2	11	13	2	15	13	2	15	11	2	18
y	18	2	11	11	2	18	13	2	15	11	2	18
st	18	2	11	11	3	27	13	1	8	11	2	18
lp	18	5	28	11	3	27	13	2	15	11	2	18
oi	17	0	0	11	0	0	13	0	0	11	0	0
j							13	6	46	11	4	36
e							13	5	38	11	1	9
t							13	5	38	11	3	27
c							13	3	23	11	3	27
u							13	1	8	11	3	27
b							13	1	8	11	2	18
f							13	5	38	11	5	45
i							13	2	15	11	0	0
t							13	3	23	11	3	27
u							13	1	8	11	3	27

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
i							13	1	8	11	2	18
ch							13	0	0	11	1	9
ow							13	1	8	11	2	18
ow							13	3	23	11	3	27
oa							13	2	15	11	1	9
a							13	1	8	11	0	0
tr							13	1	8	11	1	9
mp							13	0	0	11	2	18
sn							13	0	0	11	2	18
danger							13	0	0	11	2	18
to							13	8	62	11	5	45
no							13	4	31	11	4	36
who							13	0	0	10	0	0
was							13	1	8	11	1	9

6 YEAR OLDS--SENTENCES
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
He	2	1	50	2	2	100	13	4	31	11	2	18
went	2	0	0	2	1	50	13	2	15	11	1	9
home	2	0	0	2	2	100	13	1	8	11	2	18
In order.	1	0	0	2	2	100	7	3	43	10	2	20
The	2	1	50	2	2	100	13	3	23	11	3	27
little	2	1	50	2	1	50	13	0	0	11	2	18
toy	2	0	0	2	1	50	13	2	15	11	2	18
is	2	0	0	2	1	50	13	4	31	11	2	18
mine	2	0	0	2	1	50	13	0	0	11	1	9
In order.	2	1	50	1	1	100	7	4	57	10	2	20
Bob							13	1	8	11	1	9
has							13	2	15	11	1	9
Mary's							13	1	8	11	1	9
cat							13	1	8	11	2	18
In order.							7	2	29	8	0	0
WHOSE CAT WAS IT?							7	1	14	11	1	9

6 YEAR OLDS--MIXED ORDER SENTENCES
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
big I am	1	0	0	2	1	50	13	3	23	11	3	27
boy tall is the	1	0	0	2	0	0						
sees red he house a	1	0	0	2	0	0						
walks town the she to	1	0	0	2	0	0						
jump cats							13	3	23	11	4	36

6 YEAR OLDS--NONSENSE WORDS
Number and Percentage of TEC Viewers and Non-TEC Viewers
Who Answered Pre- and Posttest Items Correctly

Test Item	Pretest						Posttest					
	TEC Viewers			Non-Viewers			TEC Viewers			Non-Viewers		
	N	n	%	N	n	%	N	n	%	N	n	%
l	2	1	50	2	2	100	13	5	38	11	3	27
i	2	1	50	2	2	100	13	4	31	11	1	9
oy	2	1	50	2	1	50	13	3	23	11	3	27
ing	2	0	0	2	1	50	13	0	0	11	0	0
sk	2	0	0	2	1	50	13	0	0	11	2	18
e	2	0	0	2	1	50	13	0	0	11	1	9
oi	2	0	0	2	0	0	13	0	0	11	0	0
th	2	0	0	2	2	100	13	1	8	11	1	9
ern	2	0	0	2	1	50	13	0	0	11	0	0
a	2	0	0	2	2	100	13	0	0	11	1	9
i	2	0	0	2	1	50	13	0	0	11	0	0
ight	2	0	0	2	0	0	13	0	0	10	0	0
sh	2	1	50	2	1	50	13	1	8	10	1	10
ar	2	1	50	2	1	50	13	1	8	10	1	10
nk	2	0	0	2	0	0	13	2	15	10	0	0
a	2	0	0	2	1	50	13	0	0	10	0	0